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THE NEXT MEETING OF THE A. V. M. A. TO BE HELD AT DETROIT

At a meeting of the executive committee at Chicago, December 1, it was voted to hold the next regular meeting of the American Veterinary Medical Association at Detroit, Michigan, with the week beginning August 21, 1916. The location is about in the center of the veterinary population, when Canada is considered, and a large attendance should be insured. It is none too early to make plans to attend and to interest your fellow practitioners, who are eligible to become members, to join in making this a record-breaking meeting for attendance.

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THE VROOMAN CONFERENCE

The chairman's address was an eloquent, careful statement of the objects of the gathering and an intimation that its time would be devoted to those objects alone. On several occasions, on the first day especially, efforts were made to carry the discussion into side tracks, but Mr. Vrooman firmly refused to allow it, and skillfully piloted the convention from reefs and shoals when it might easily have come to grief.

The large and representative attendance included all the men who have been most active in the fight against foot-and-mouth dis-

ease, the chief officers of the Bureau of Animal Industry, State Veterinarians and Live Stock Commissioners, as well as many others vitally interested in its suppression, farmers, railroad men and superintendents of stockyards. The general tone of the convention was of congratulation for what had been accomplished, hope for the future, and of confidence in the Bureau of Animal Industry and its officers. A strong realization of the extent of the peril threatening the live stock industry of the United States was voiced by many speakers, with corresponding gratitude that it had been successfully met and overcome.

There were a few discordant notes from individuals who thought they had reason to criticise methods and officials, and it was evident at times that the State of Illinois had disappointed her neighbors, but on the whole there was manifest a desire to forget and forgive the mistakes that had been made and to trust that they would serve a good end in pointing the way to better methods in the future.

Among the many points of interest was the discussion on quarantine. It came out that a quarantine could not be imposed by federal officers without referring to Washington and waiting for the publication of notice of quarantine in the newspapers. It was thus nearly two days after the discovery of infection in the Chicago Stockyards before they were placed under quarantine. This is obviously so absurd and dangerous that no doubt the necessary steps will be taken to rectify it. It should not take two minutes to quarantine a stockyard from which infected animals are being shipped.

Another matter of great importance is the necessity of providing the necessary funds for compensating owners of herds destroyed. The difficulty, delay and uncertainty of getting these funds has added very much to the trials of the officers engaged in control work and is the cause of appeals to the courts and sometimes of concealment of disease.

Part of this difficulty is inherent in the dual system of state and federal control, but no doubt much can be done to harmonize these authorities, and to provide that necessary funds shall be available when required. Payment of day laborers employed in burying condemned animals, men engaged for disinfection of premises, guards and watchmen, cannot be postponed indefinitely without creating trouble and dissatisfaction. Funds should be instantly available for such purposes, and it appears to be the duty of state legislatures to provide them.

Considering the difficulties to be surmounted, the vastness of the country infected, the inexperience of the men employed in the work, it is a marvellous achievement to have controlled the disease. The veterinarian has proved his value to the country.

F. T.

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THE UNITED STATES LIVE STOCK SANITARY ASSOCIATION MEETING

The nineteenth annual meeting of the United States Live Stock Sanitary Association convened Wednesday morning, December 1st, at LaSalle Hotel, Chicago, with an exceptionally large number present. This was due to the fact that for two days previous a conference called by the Assistant Secretary of Agriculture Vrooman and ably presided over by him, had been in session and was attended by many interested in the Sanitary Association meeting.

After the usual opening ceremonies the business portion of the program proceeded with dispatch and many important papers were given.

The forenoon session was occupied by articles on "Milk and Meat Inspection" by Dr. Robertson of Chicago; "Forage Poisoning" by Dr. Graham of Kentucky; "Compulsory Pasteurization of Milk" by W. B. Barney of Iowa; "Summary of Investigations on Immunization against Anthrax" by Dr. Eichhorn of Washington and "Infectious Pneumonia of Calves Shipped from Public Stock Yards" by Dr. Kinsley of Missouri. All these caused considerable discussion, particularly the milk pasteurization paper which seemed to show that the importance of this question was generally recognized, and the opinion, as expressed, seemed practically unanimous that one of the most common methods of spreading infectious diseases was through the medium of unpasteurized dairy products.

In the afternoon the program opened with papers on the subject of "Hog Cholera" by M. Dorset of Washington, D. C. and C. J. Sihler of Kansas and were discussed by Doctors Stange, Moore, Bennett and others. This subject, as usual, caused prolonged discussion and indicated the necessity of further investigations being carried on before definite conclusions could be reached. An able paper by Dr. Cary of Alabama on "Tick Eradication" followed. An interesting talk on co-operation between State and Federal

Authorities in Controlling Infectious Diseases by Assistant Secretary Vrooman of Washington was listened to with careful attention. This was followed by a moving picture exhibition on Sanitary Farm Equipment by Norman K. Wilson of Pennsylvania.

In the evening the members of the Chicago Live Stock Exchange gave a banquet to the members of the association and visitors at the Stock Yards Inn, which was enjoyed by all.

Thursday morning papers were read by Dr. Eliason of Wisconsin on "Co-operation with the Bureau of Animal Industry in the Control and Eradication of Contagious and Infectious Diseases"; by Dr. Luckey of Missouri on "Livestock Inspection"; by Mr. Davies of Minnesota on "Sanitation in the Transportation of Livestock"; by Dr. Bolser of Indiana on "Disinfection of Stock Yards" and by Dr. Houck of Washington on "Effective Quarantine as a Factor in Controlling Foot-and-Mouth Disease". These were discussed by Doctors Butler, Marshall, Dyson and others and indicated the necessity of careful co-operative work between local state and federal authorities and the importance of proper attention to sanitation and cleaning of cars, stock yards, etc., used in handling livestock. It was made apparent that some latitude should be given in the matter of quarantines and many of the speakers favored more or less elastic restrictions so they could be modified according to circumstances.

The business session Thursday afternoon completed the program. Officers elected for the ensuing year were Doctor O. E. Dyson of Illinois, President; among the Vice-Presidents elected were Doctors Stange, Cary and Howard; Dr. J. J. Ferguson was re-elected Secretary-Treasurer.

The meeting was considered by those present to be one of the most important ever held by the association and the subjects discussed and the conclusions reached cannot fail to have an important bearing on the future livestock activities of the country.

The foot-and-mouth disease epidemic was apparently foremost in the minds of the majority of those in attendance; but it was evident that the events of the past year had brought those interested in livestock sanitation to a better realization of the importance of prevention of animal plagues of all kinds, and the adoption of preventive rather than curative measures to bring about the desired end.

J. G. W.

ANIMAL PROTECTION AND THE VETERINARIAN

In view of the greatly disturbed condition of the world during the past year, the report of the Secretary of Agriculture for 1915 is of more than usual interest, especially as it relates to animal products. The total estimated value of all farm crops and animal products for the year is $9,873,000,000, which exceeds by $83,000,000 that of any previous year. The exports of horses and mules increased from $4,000,000 to $77,000,000; meats and dairy products from $146,000,000 to $220,000,000. Usually the number of horses and mules exported is insignificant. The total number (355,000) exported represents little more than 1 per cent. of the supply in the United States, and was not sufficient to prevent a decline of about 4.6 per cent. in the average price, although the exports of meats and dairy products rose about one-half they did not prevent a decline in prices to producers of cattle and hogs, possibly because of a greater increase in available supplies during the year. This is a rather remarkable showing when the ravages of the foot-and-mouth disease are considered.

Attention is called to the enormous direct losses from the diseases of live stock. Although an accurate statement cannot be given, even of the direct losses, it is known that the indirect losses are also very great and they cannot be estimated at all. However, a conservative estimate, based on data for thirty years, shows that the annual direct losses from animal diseases are approximately $212,000,000. Some of the larger items indicated in this annual loss are as follows:

Hog Cholera	$75,000,000
Texas Fever and Cattle Ticks	40,000,000
Tuberculosis	25,000,000
Contagious Abortion	20,000.000
Blackleg	6,000,000
Glanders	5,000,000

Other diseases are mentioned which involve smaller items, with a group of unclassified diseases amounting to $22,000,000.

Surely this state of affairs demonstrates the need of educated and efficient veterinary service. Basing our estimate of approximately 14,000 veterinarians in the United States upon the official census of 1910 and the pro rata increase each year, this would mean that if these losses could be abolished and each veterinarian were

equally active in the work, each one would be entitled to receive, as his share of the proceeds, the sum of $15,135. The problem is largely educational and involves research. If each state expended annually the sum of $50,000 for educating and training properly qualified men the total cost would amount to only a trifle over 1 per cent. of the total amount lost each year. There is little question that this expenditure, properly directed, would diminish the losses, and improve the conditions or would, at least, prevent them from getting worse. Such an investment should yield large returns after a period of years. Any business concern suffering a similar percentage of loss might expect to experience some inconvenience in the course of time. Such a relative loss of animals has a bearing on the question of the high cost of living and it would appear that the veterinarian has a duty to perform.

Tick eradication in the South has been carried on with energy. All new ground gained encourages a greater development of the cattle industry. During the year 37,255 square miles have been opened up, so that up to June 30, 1915, 253,163 square miles had been cleared of this pest.

In the hog cholera work, the use of properly prepared serum has had a pronounced effect. A great number of hogs have been saved. The systematic eradication work conducted in certain counties in 16 states shows that 178 hogs in a thousand died from cholera in 1912, 168 in 1913, and only 49 in 1914. Only 62,690 died in these counties in 1914, as compared with approximately 200,000 in each of the two years preceding.

In round numbers there are 200,000,000 cubic centimeters of hog cholera serum produced in the United States. Of this amount about 25 per cent. or approximately 50,000,000 cubic centimeters are prepared by state governments. The federal government produces serum for experimental purposes only. Private establishments of which there are between 90 and 100 therefore manufacture about 150,000,000 cubic centimeters. Of these establishments 81 have secured licenses from the Department of Agriculture and are privileged to carry on an interstate business.

Under the virus-serum-toxin act of 1913 the Department is authorized to promulgate such regulations as may be necessary to prevent the preparation, sale, barter, exchange, or shipment, in interstate commerce, of worthless or contaminated viruses, serum, etc. The Department may revoke licenses after a hearing has been

granted, and federal agents or employees may enter and inspect any licensed plant at any hour. Some violations have been discovered and successfully prosecuted.

Government ownership has been suggested in the matter of the control of serum production. Although some things may be said in favor of the plan, it is doubtful if it would be practical. If the government produces the material it should control the output. At present there are 21 states with established plants and these states may not care to discontinue the work. The purchase of existing establishments and the erection of others by the federal government would necessitate a large outlay and federal manufacture, although administered with honest methods, may not serve as a guarantee that no contaminated or impotent serum would be sold.

As a substitute for government ownership the Secretary suggests that the present inspection service be continued with an adequate force of inspectors; that the law provide for the establishment and maintenance of a "government test station" for serum to receive official samples of all serum produced by licensed plants and to test them for purity and potency; to prohibit the interstate shipment of any product of which a sample had not been tested and found pure and potent; the imposition of a tax upon all serum of which samples have been tested, with provision for affixing tax stamps and marks prior to sale. As now conducted the establishments make the tests themselves. The present method of inspection is effective in seeing that the steps necessary to produce a good article is carried out, but the weak point now is the inspection of the tests and it is this feature the government should control, although the available methods for determining purity and potency are not scientifically exact. It is suggested that the tax for the tests should be sufficient to maintain the station without increasing the cost to the farmer since the manufacturers would be relieved of making their own tests. There may be a question as to whether the plan will operate as suggested, for it is usually the rule that the consumer pays the tax ultimately. The cost to the government in carrying out such a plan would undoubtedly be much less than under "government ownership."

The foot-and-mouth disease, which we trust has reached the vanishing point, is referred to in some detail. The especially mild and obscure form of the 1914 outbreak at its outset and the diffi-

culty of diagnosis is frankly stated. The exact origin has not yet been discovered, although it is believed the infection was introduced from a foreign country. The methods and progress of eradication are described. At one period new cases of the disease were found more rapidly than the old ones could be disposed of. After some months of vigorous work, the outbreak was brought under control and the spread of the disease checked.

One of the most complicated problems of the outbreak was the herd of pure-bred cattle at the National Dairy Show. It is stated that the manager of the show was warned by an inspector of the Bureau of the danger of holding the show because of the recent discovery of foot-and-mouth disease. At the close of the show, the herd was detained to determine whether they had become infected or not. One of the cows soon developed the disease and the herd was placed in close quarantine. Considerable bitterness developed over this herd and others where valuable animals were involved, particularly in the matter of appraisements and quarantine. It was emphasized that the breeding value should be considered as well as beef and dairy value. Congress, however, in making appropriations specifically provided that the beef or dairy value only should be the basis of appraisement, as was the case in former outbreaks. The department was therefore obliged to keep within the law. In case of further outbreaks the Secretary recommends that the breeding value be taken into account for reasons of equity and practical expediency, but that this value shall not exceed three times the beef or dairy value. On this limit there will doubtless be much opposition among the breeders.

A recurrence of the disease occurred last August as a result of the use of contaminated hog cholera serum. This serum had been tested before its use and appeared to be pure but subsequent and repeated tests demonstrated that it was contaminated. The limitations of ordinary knowledge and ordinary precautionary measures have been exposed and the necessity for preparedness for extraordinary conditions has been emphasized.

For more than a year the veterinarians have been embattled, in trench warfare, with an enemy of the most insidious character. There have been many anxious moments; there have been temporary defeats; now victory is in sight, but there can be no peace until the enemy is annihilated. The experience has chastened many; but out of it all some lessons for good must come; some advanced

knowledge gained of the enemy's strategy, which will strengthen our methods of preparedness for future and unannounced attacks.

P. A. F.

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REORGANIZATION COMMITTEE

A portion of this committee met December 1, at the Hotel LaSalle in Chicago and in a tentative way discussed some of the problems that lie before it. The sentiment of those present was decidedly in favor of receiving suggestions from members of the association who are interested in the matter. Such suggestions will be welcomed by the chairman of the committee, Dr. C. A. Cary, Auburn, Alabama.

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EUROPEAN CHRONICLES

Bois Jerome.

For a long time to come, regrets will prevail in the veterinary profession all over the world that the last Veterinary Congress could not be held. The preparation of the various committees had been so perfect, the number of valuable papers and reports that were promised, the gathering of veterinarians from all over the world, the occasion for celebrating the name of the great veterinarian, JOHN GAMGEE, who had inaugurated these congresses; everything in fact had justified the expectation for an unusually grand success.

All that has been useless. The congress was not held. Was all the work that was done, were all the reports, the papers, the communications that were promised and looked for, to be all lost?

Fortunately, No. Several have already found their way in some of our professional journals and the *Review* has made allusions to some of them, as these reached our offices. To day it is our pleasure to notice two that have found their way in the French and English journals.

In the first, the *Recueil*, we read the valuable report of Professor G. MOUSSU of Alfort, which was presented to the Congress.

It is on EPIZOOTIC ABORTION. One of the diseases which is most ruinous to French stock raising and whose effects though less apparent than those of foot-and-mouth disease, tuberculosis, paratuberculous enteritis, anthrax fever, etc., are extremely severe be-

cause of the diminution in the animals, in the loss of young ones, the reduction in the milk production as well as the many complications that may accompany its presence.

EPIZOOTIC ABORTION is not a disease of bovine species alone; it also effects horses, and probably animals of the ovine, caprine and swine species. That of bovines is the object of the report.

The one presented by Prof. Moussu is long and will not permit in the space allowed for this chronicle to be presented in whole, but the subject is so important and of so great interest for some of our readers that I must consider it as thoroughly as I can.

The learned professor has treated his subject in a peculiar manner, dividing it in some ten chapters, some of which are more or less in the shape of questions and it is the resumé of these chapters that I gather for our friends in America.

1—METHOD OF ABORTION DURING GESTATION—EARLY, ORDINARY, LATE ABORTION. The indisputable fact, classically speaking, is that abortion takes place between the 4th and 5th month of pregnancy. Yet, cases of abortion are observed at any date during gestation, in the 1st, 2d or 3d month, and again as near as the day of delivery.

As long as epizootic abortion may take place at any time of gestation, it may be called EARLY or PRECOCIOUS, ORDINARY or LATE. If the first is overlooked, it is because the products are not detected by those who have care of the animals, and if they are noticed they are not considered as important as those of later date, four or five months. This is an error, and is another danger, as no precaution is taken from any point of view.

2—INFLUENCE OF THE REGIME AND TIME OF THE YEAR. Abortions can be observed at any time of the year but are more numerous at the time of stabling than in the pasturing season. In the first the chances of contagion are greater and more numerous.

A peculiar observation remains, however, without satisfactory explanation. An enzooty breaks out in a stable. For one, two or more months or more, successive abortions are observed, sometimes without a single normal accouchement. Then at a given time, there seems to be a stop, normal deliveries follow and abortions disappear or are very exceptional. All this takes place, without any care having been taken to stop the epizooty. Why? And why in some localities or rural areas has abortion made ravages for thirty years or more no matter what precautions have been taken; and in others

the disease made only a short appearance and disappeared without any preventive or curative measures having been taken?

3—THE FETUS AND ITS ENVELOPES. In infectious abortion, the fetus has not the same characters as in accidental, traumatic or other abortions. The alterations, especially those of the placenta permit a clinical diagnosis, that of infectious or epizootic abortion.

By direct examination, one easily observes that among the placental tufts, there are some which are healthy and have their red or uniform dark red aspect of the placenta of normal delivery. But there are others, on the contrary, which appear yellowish red or dirty yellow, and which are evidently diseased.

The extent of these alterations varies. But in most cases they show two different types; sometimes the diseased vascular tufts are grouped along with the others and occupy more often the region of the body of the uterus and the posterior part of the gravid uterine horn, while the healthy tufts are grouped towards or at the bottom of the gravid and the non-gravid uterine horn.

In other cases, the distribution of the healthy and diseased tufts is more irregular; there are healthy tufts from the body of the uterus to the bottom of the gravid horn and also diseased ones with a similar disposition.

Moussu believes that this depends on the mode of infection. In the first case, it is due to ascending external infection by the direct genital way and in the second to descending infection of hematogenous origin.

4—THE CONDITION OF THE FETUS. This can be classified in three groups.

1. Those where there exists cadaveric decomposition and beginning putrefaction, due to other infections, added to that which has produced abortion, which are most often of external origin, and sometimes of internal hematogenous origin. The fetus cannot be used for useful researches.

2. Those where no external apparent alterations can be observed, but in which post mortem reveals sero-hemorrhagic exudations in the splanchnic cavities. They are always infected. The blood, tissues, viscera and digestive contents ordinarily give cultures, where the abortive bacillus and coli or paracoli can be found.

3. Those where there are no visible alterations. These are most useful for research.

Cultures with the blood or stomach contents may be negative

but again be positive with the blood and contents from the digestive tract, together or simply with one or the other of these products.

5—Mode of Action of the Causes of Abortion. The complicated and varied alterations being well known, the causes of abortion can be explained as follows:

When the lesions are predominating on the envelopes, gestation can go on to term or near it, if the surface of the intact placenta is still large enough to keep up between the mother and the fetus sufficient nutritive exchange for the life of the new individual. The new born at term and those prematured near term remain viable, if they are not infected, although out of mothers affected with epizootic abortion or of abortion infection. Such cases are not frequent, but yet not exceptional.

When, on the contrary, the surfaces of the intact placenta is too reduced to keep up between the mother and the fetus sufficient nutritive exchange for life, the little one dies at any period of gestation, although not infected and is expelled shortly after, dead or alive, but not viable.

In another form of evolution of the accidents, the fetal fluid becomes infected with the specific agents of the disease, and the fetus also, by the digestive tract through the amniotic fluid or by way of the blood through the placental circulation. If this takes place near term or delivery, the fetus is born alive or viable but dies shortly after birth. If on the contrary, this takes place some time before term, the fetus dies, is expelled shortly after and not altered in appearance.

Finally, when on the evolution of the specific placental lesions, an accidental genital infection develops as a secondary affection, the progress of the process is accelerated, the fetus dies quickly and is expelled, more or less altered, sometimes in a state of putrefaction.

6—Causes of Epizootic Abortion. It is admitted by nearly all, that the principal cause of epizootic or infectious abortion *in cows* is due to the action of the bacillus of *Bang. Is it the only cause?*

Professor Moussu says: "In my opinion, *No!* The abortive bacillus of Bang, can alone, promote abortion, slow to appear: that is a fact definitely demonstrated. In a number of cases, I have the conviction that it is associated with coli or paracoli, which produce more rapid abortion and I am convinced that many infectious abortions are functionally of a special variety of paracoli."

In various enzootics of abortion, Moussu has recognized the

presence of a specific variety of paracoli, exclusive of the bacillus of Bang and with cultures he has been able to produce at will, rapid abortion, in all the subjects of the experiments; Guinea pigs, does, goats and ewes.

7—Mechanism of the Infection. For a long time, it has been thought that infection was exclusively taking place by the ascending genital tract, the organic alterations being limited to the uterus, and undisputable proofs being furnished by experimentation. Whether the genital infection takes place by the bull or whether it may be by external genital contamination and become ascending, is not important. This contamination is so easy that it seems natural that ascending infection can take place and progress.

But experimentation has also given proofs, no less positive, of the possible infection through the digestive tract and secondary through the circulation. These were proved by the investigations of the English Commission, which have shown that the pathogenic agent or agents of the disease can be brought to the placenta as a sequela of the soiled condition of solid or liquid food.

These facts can be controlled by everyone and Moussu has obtained them with the bacillus that he isolated. But leaving aside the contamination by the bull and admitting infection taking place during gestation, Moussu believes that the infection takes place most often by the genital tract during stabling, and that in abortion in pastures, it is the digestive apparatus, which acts principally in the spreading of the disease.

All this is of interest from the prophylactic point of view. Moussu believes that in early abortion, contamination occurs principally through the bull, unless a latent pre-existing genital infection of the female is present: that in ordinary or late abortion, contamination takes place by external genital introduction of the germ and that in ordinary or late abortion in pastures, the infection must be caused principally through the digestive tract, the food or the drink.

8—Experimental Abortion. The experimental reproduction of abortion by intra-vaginal infection of a pregnant cow or by ingestion with cultures of Bang's bacillus is an admitted fact.

Attempts of the same kind were made by Prof. Moussu with the paracoli which he had found in various enzooties and he has obtained many positive results in most of the females that he inoculated. After giving the results that he had observed, the positive

as well as the negative, he came to the conclusion that it is very certain that the abortion bacillus of Bang is not the only agent that can produce epizootic abortion in cows.

9—Diagnosis of Infectious Abortion. One of the most important and certainly most practically useful question in infectious abortion of cows is the possibility of precise diagnosis of future abortion or better of the abortive infection during gestation.

Today we have no means of quick, practical and sure investigations. A close observer may have some good points which may make it suspected. But if these are sufficient for the application of some prophylactic measures, they are not enough. A threatening abortion has not the value of the diagnosis of one likely to take place at a later period.

The *Abortine* of the English Commission has given only unsatisfactory results. The methods of agglutination, of the derivation of the complement, have done no better. The experiments made with *Abortine* by Moussu and which he studied especially and tried with subcutaneous and intra-dermal injections, have given him results without any significance.

In résumé, we have not at present any positive and practical means to diagnose abortive infection or its severity.

10—Treatment. Today we cannot fight against epizootic abortion with any efficiency. The treatment recommended as efficacious may have shown good results because of fortunate coincidences and, while successful in some outbreaks, failed in others.

The problem of the infection is too complex. Its nature and causes are too numerous to be solved in the present state of our knowledge.

Prophylaxis is for the present the measure that gives certain results, for instance, the strict isolation of cows about to abort, the disinfection of the barns, of the genitals of aborted animals, etc., etc.

But the true solution will be the application of a preventive vaccination or a specific treatment practical and sure. Trials of vaccine have been made in Europe and America. Moussu has also tried it but it is to be hoped that at the Congress the solution will appear from the communications and papers which will be presented.

The *Journal of Comparative Pathology and Therapeutics* has already published several of the reports intended for the London Congress, that of Prof. W. L. Williams on the technic of the Opera-

tion against Roaring, that of Sir John McFadyean on Tuberculosis, that of Director Vallee of Alfort on Immunity Against Tuberculosis and Vaccination Against Tuberculosis in Cattle.

In the September, 1915 number of the Journal, there appears one from an American, Doctor L. A. Merillat, Professor of Surgery in the McKillip veterinary college of Chicago. The subject is Respiratory Anesthesia of Animals, one with which the author must necessarily be a master, his experience covering "10,000 horses and many small animals."

After paying a just tribute to America in recalling the name of Doctor T. G. Morton who introduced the use of anesthesia in human surgery, and a few remarks on the necessity of general or local anesthesia, on the advantages that a regular anesthetist would prove, if available, or to the student, Doctor Merillat states that the successful administration of an inhaled anesthetic requires a wealth of experience.

The patients which require general anesthesia are divided into groups. In one, he places those that can be safely anesthetised without any special skill on the part of the anesthetist. Neurotomy, tendonotomy, ablation of small tumors, castration, etc., etc. For such, respiratory anesthesia is always better than local or regional. From 60 to 90 c.c. of chloroform (for horses) are required for those cases and to obtain a state of surgical anesthesia.

In another group, are found animals more or less enfeebled by disease or those which demand long and bloody operations. Poll-evil, fistula of the withers, septic podotrochlitis, carcinomas, schirrous cord, large tumors, etc. The real anesthetist is then required.

A few words are then given in relation to the rate of deaths likely to be recorded and related that of an anesthetist who out of 45,000 patients had never had a single death to record from anesthesia.

Dr. Merillat then gives at some length the description of the two methods for administering respiratory anesthetics for serious operations and which have proved the safest in his hands.

First Method—The animal to be submitted to serious operation must be in as healthy and good condition as possible, as far as grooming, feeding, cleaning, etc. is concerned. His bowels are prepared by diet and his stomach cleared of food.

Chloroform is too toxic to be administered alone, hence Merillat resorts to (1) a preliminary anesthetic, (2) then the anesthetic proper and (3) the terminal anesthetic.

Chloral hydrate is given *per os*, 30 to 40 grams in a drench of hot water an hour before the operation. It is the preliminary anesthesia.

For the anesthetic proper, chloroform is used with a sponge and a canvas cylinder, 18 inches long. This is closed at both ends with a tobacco-pouch string. One end is drawn over the nose and secured to the halter. At the other end, the sponge containing the chloroform, is placed against the nostrils, 30 grams being used first and 30 more later if anesthesia is not obtained.

The free end of the cylinder is held shut with the tobacco-string or the hands. When the reflexes are manifestly under control, the terminal anesthetic is administered.

It is composed of equal parts of alcohol, chloroform and ether. This is given through a towel laid over the nostrils, the parts being well soaked with the mixture. Air is allowed to pass freely through the undermost nostril.

In some cases pure chloroform may from time to time be dropped on the towel instead of the mixture.

For small animals the same general plan is used. But chloroform demands greater care and attention. Ether is better and safer for small animals and should be chosen by the inexperienced anesthetist.

Second Method—This, Merillat recommends to be used with great caution, when resorted to for serious operations.

It is the intratracheal method. The preliminary anesthesia of chloral is given, followed by the anesthetic proper and the terminal into the trachea with an atomizer.

The tube of this atomizer is attached to a foot-bellows, the bottle containing the anesthetic is placed in a small box containing an electric light to raise the temperature of the liquid and the delivery tube is placed into the trachea through the upper nostril.

Splendid success has been obtained in this new method of respiratory anesthesia.

The following are the conclusions of this interesting communication:

1—For slight anesthesia suitable for short operations, the respiratory method is safe in the hands of even an untrained anesthetist.

2—For the profound anesthesia, required for serious and long operations, respiratory anesthesia is safe only in the hands of an expert.

3—The most discouraging part of respiratory anesthesia for animals is the difficulty of regulating the dosage. We need an apparatus to measure automatically the vapor delivered and consumed by the patient.

4—For profound anesthesia of considerable duration the best way to keep within the limits of safety, is by administering a preliminary anesthetic of chloral, followed by chloroform and then maintain the narcosis with a terminal anesthetic of alcohol, chloroform and ether.

5—Despite profound anesthesia, exhaustion of the brain follows serious operations. This may be prevented by blocking with cocaine, the nerve trunk which leads from the seat of operation.

6—The intratracheal method of respiratory anesthetics is worthy of trial. It is a step in the direction of dose regulation suitable for animals.

7—The intravenous method of ether and chloroform is unsafe with the apparatus that we have at present for its administration.

A. L.

CORRECTIONS: In the November number on page 184, in the fourth line from the bottom the name of Dr. Marshall should be substituted for that of Dr. Jones and the name of Dr. Jensen for that of Dr. Marshall.

On page 315, in the article on Hexamethylenamin in the December number, the word curative should be substituted for laxative in the tenth line from the top of the page.

In the October number of the JOURNAL Dr. W. H. Robinson of Portland, Maine was listed as a visitor at the Oakland meeting of the A. V. M. A. when he should have been classed as a delegate. Since his return to Maine, Dr. Robinson has been appointed to the State Board of Veterinary Examiners.

FOOT-AND-MOUTH DISEASE WITH SPECIAL REFERENCE TO THE OUTBREAK OF 1914-1915

(*Continued from page 285*)

Methods of Eradication

That this disease must be controlled admits of no argument; therefore differences of opinion hinge solely upon the method or methods to be adopted.

The methods of eradication applicable to foot-and-mouth disease include: (1) Immunization; (2) Quarantine and Disinfection; (3) Slaughter and Disinfection. Each will be discussed separately in the order named.

(1) Immunization. Immunization in the present outbreak was out of the question as the only serum thus far produced gives but a passing immunity of only several weeks duration, unstable at best, and impossible to obtain in this country or in sufficient quantities in any country. To Professor Loeffler more than to any other we owe our present knowledge relative to the effects of serum immunization for foot-and-mouth disease. Ever since he was placed in charge of the laboratories for the investigation of foot-and-mouth disease, the Bureau has carefully followed his work. His publications on the subject, and particularly those referring to immunization against the disease, have appeared at various intervals and have been the subject of discussion at several international veterinary congresses. While his work on the serum treatment of this disease is of great scientific interest its practical value has not yet been proved. In the last annual veterinary report of the Prussian Government (1914) a detailed description is given of a series of experiments which were undertaken to establish the value of the serum prepared by Professor Loeffler's method in his own laboratories. These experiments proved that the serum does not protect animals in small doses (20–30 cubic centimeters) but large doses with repeated injections afforded a protection to the animals and might be employed to an advantage in the eradication work when control of the disease by quarantine measures is attempted. In the partly successful experiments, animals over three months old received four injections of serum at intervals of ten to fourteen days. The first injection consisted of 200 cc. and the subsequent injections of 60, 30 and 30 cc., respectively. Considering that the prep-

aration of a liter (about a quart) of serum costs $25.00 in Germany, it would cost over $8.00 to protect every animal over three months old, provided the hogs used for the preparation of the virus are passed for food as is the case in Germany; otherwise, the cost of the serum would be at least doubled. It should also be considered that even in these experiments 6 to 8 per cent of failures occurred, and it must be recognized that in a country like the United States with so many highly susceptible animals a single failure of protection might prove to be the source of a new outbreak.

The impracticability of the serum immunization is further augmented by the difficulty of preparing the serum, and particularly on account of this disadvantage the method could not be utilized satisfactorily in countries where the disease is not prevalent or where it occurs only as a result of its periodical introduction. Moreover, the immunity furnished is of quite short duration, lasting only from two to three weeks.

The preparation of the serum requires a propagation of the foot-and-mouth disease virus and its presence in this country would be a constant menace to the stock industry, even with the exercise of the greatest precaution and care. This has been substantiated in Germany where the government was called upon to pay damages for losses from outbreaks resulting from the escape of the virus from Professor Loeffler's laboratories.

The live stock conditions prevailing in this country would also make the serum immunization extremely difficult, if not impossible. The shipment of stock over long distances, particularly the shipments radiating in all directions from stock centers, would necessitate the protection of a large percentage of the stock in the country, or at least in an extensive area. This, with Loeffler's method of serum production, would be impossible.

Protective serum can not be kept for a period of years as it deteriorates and therefore the preparation of such serum could only be considered at the time of the appearance of an outbreak. Considering the great amount of serum required for the immunization of a single animal, it is almost incomprehensible how a sufficient amount of serum could be produced to protect the stock even in a single state. It should be borne in mind that the vesicular contents of hogs affected with foot-and-mouth disease is used for the hyperimmunization of cattle. One or more injections of 100 cc. of such vesicular fluid are made into each of the cattle which produce the

protective serum. The average amount of vesicular fluid obtained from a sick hog is about 5 cc.; thus for each injection it is required to have about twenty hogs affected with foot-and-mouth disease. This fact alone clearly suggests the impracticability of Professor Loeffler's method.

Professor Mettam, in his report on foot-and-mouth disease for the Tenth International Congress at London, 1914, discussing the value of the serum treatment, said: "It must be admitted that serum therapy, as far as foot-and-mouth disease is concerned, is not upon a satisfactory basis. The amount of serum required is large and is costly; its action, as with other sera, is of short duration. It can only give protection for a few weeks at the most, and it may fail in its effects, because either the passive immunity established is of low degree or because the virulence of foot-and-mouth disease virus is variable." * * * * "the time has not yet arrived when we can accurately appraise the value of serum as a preventive against foot-and-mouth disease."

Leclainche at the same Congress stated "Up to the present attempts to immunize animals against foot-and-mouth disease have not yielded any results capable of practical application. Effectiveness does not appear to be capable of accomplishment and serum therapy has not rendered the service expected of it. Experiments carried out in France, in which repeated injections of 40 to 50 cc. of serum were administered, show that these doses only exceptionally confer any immunity. The use of large doses is hindered by considerable practical difficulties and it would be too expensive. Besides the conditions under which serum is obtained are such that its properties are very inconstant. It is impossible to standardize it before use and the effects of the treatment cannot be depended upon. Serum immunization, therefore, has only an insignificant prophylactic value."

"Further investigations in this connection are an urgent necessity" was the conclusion of Nevermann, Germany's highest veterinary official, at London, in 1914.

In Hoare's System of Veterinary Medicine, Volume 1, 1913, under the heading of Protective Inoculation appears the following: "Various serums have been tried by the continental authorities but it can not be said that such have proved of practical utility."

The English translation of Hutyra and Marek, Volume 1, page 151, states "The problem of general immunization is not solved at the present time", in referring to foot-and-mouth disease.

Not until a more practical method of immunization has been discovered will it be possible to utilize it for the successful eradication of foot-and-mouth disease in the United States or any other country.

(2) QUARANTINE AND DISINFECTION. It has long been maintained that the method of quarantine without slaughter is a possible means of eradication but one which by its very nature admits of a greater spread of infection. As will be shown elsewhere in this paper foot-and-mouth disease has been combated by quarantine and disinfection in certain European countries for many years. The constant recurrence and widespread dissemination of the infection in these countries prove conclusively that these measures have been unsuccessful. The necessity for an absolute quarantine in a disease so easily transmitted is apparent and this has been found impossible, even in Germany where military support is given to the best organized veterinary police system in the world. Indeed every European country which now has the disease hopelessly fastened upon it has permitted the conditions to exist through this very system of attempted eradication. As a result the infection has become so widely distributed in many of these countries that the authorities are forced to accept this measure of control as the only available and economic method under the present conditions. The infective agent may be spread so readily that it is difficult to prevent its dissemination even where animals are confined in tight sanitary buildings with the most careful use of disinfectants and surrounded by guards, a method entirely impracticable on the average farm and nearly always much more expensive than the value of the average animal so quarantined. Added to these objections is the greater one of known failure in all countries where this method has been tried. In the outbreak of 1902 there were about 100 herds already affected in Massachusetts when the Department began operations for eradicating the disease. Before all these herds were reported or could be reached the animals had recovered and subsequently were not slaughtered but quarantined and the premises disinfected. The difference between the 4712 cattle affected in the 1902 outbreak and the 3872 slaughtered represents chiefly those that made a recovery, although it also includes a few that died of the disease. Some of the owners of the recovered animals visited the Bureau office subsequently and requested that their herds be appraised and destroyed on account of the complications involving the udders and

feet which had developed making the animals unthrifty and unprofitable. Their requests were complied with and after the commencement of the work of eradication no newly affected herds were allowed to be held for recovery. In the 1908 outbreak all herds that became infected were slaughtered, and the same is true of the 1914 outbreak, with the exception of one herd already referred to which was on exhibition at the National Dairy Show in Chicago when the disease broke out among them on November 1. At this time it was the desire of the Department to slaughter the first few animals which contracted the disease and to limit the spread of the infection to others by establishing hospital conditions, separating the herd into small units and segregating these groups by means of partitions and muslin curtains saturated with bichloride of mercury solution and other sanitary methods. While the latter was started and continued for a brief period it was soon abandoned as certain herdsmen, with the approval of the employer, adopted the German method of directly exposing the cattle under their supervision in order that the disease might run its course in all the animals as quickly as possible. In the meantime at the request of a committee of the National Dairy Show Exhibitors Association the Secretary of Agriculture granted permission to the owners to retain their cattle under absolute quarantine until they had fully recovered from the disease and were not disseminators of the virus, which should be determined by experiments to be applied subsequently. Before starting these tests it was the desire to move the cattle further away from the Chicago stock yards and arrangements for the removal of the cattle to the Hawthorne Race Track near Cicero, Illinois, were completed on December 26. An inspection of the animals at that time revealed no cases of foot-and-mouth disease. Only a few cases of various forms of ailments, such as articular rheumatism, pulmonary disturbances and metritis were observed. Five cases of metritis, however, still persisted and these, together with two tuberculin reactors, were destroyed prior to the moving of the cattle. In order to prevent the introduction of virus into the new quarters so far as possible it was decided to spray and scrub the animals with a three per cent cresol solution. They were then taken through a foot bath into a separate stable which had been previously cleaned and disinfected with a six per cent solution of cresol. The animals were then dried with towels, left there all night, and the next morning loaded into special box cars in which they were conveyed di-

rectly to their new quarters at Hawthorne Park. The same care was exercised with regard to the attendants; all their belongings and clothes were disinfected and fumigated, their shoes disinfected and the men themselves required to bathe and change to clean linen. At Hawthorne every precaution was used in unloading in order that no infection would be scattered and the grounds were guarded by deputy sheriffs during the entire period of quarantine.

It is not my purpose to go into details of the quarantine of the Dairy Show Herd, but it should be of interest to record at this time the experiment which proved that the cattle in the Show Herd had fully recovered. Since the publications of Loeffler in 1904 it has been known that certain animals which recover from foot-and-mouth disease may act as carriers of the virus for a considerable period, precisely like persons who act as bacillus carriers for long periods after recovery from typhoid fever, cholera and diphtheria. Such virus carriers therefore must be considered a constant menace to the eradication of the disease when only quarantine measures are adopted. In order to ascertain if any such virus carriers existed among the animals of the National Dairy Show, 50 head of healthy young cattle which had been secured for this purpose were placed in contact with them on March 25. These test animals consisted of 34 steers and 16 heifers, ranging in age from one year to eighteen months. The tests, which were conducted by veterinarians from the Bureau of Animal Industry, included inoculations of the saliva, feces, urine, vaginal discharges and of hoof scrapings, feeding of milk, manure and direct exposure tests. In the exposure tests one susceptible animal was placed between two recovered show cattle and kept there for 48 to 64 hours, then changed and placed between two other recovered animals. This was done until all recovered animals had been given an opportunity to infect the susceptible animals and was repeated three times so that each recovered animal gave 144 hours of exposure to the test animals. At the same time the recovered herd was divided into 48 groups of approximately 15 animals each. From every animal of each group a small quantity of feces was collected, mixed with water, strained, and a cheese cloth saturated with the strained fluid. This cloth was then rubbed into the buccal cavity of the susceptible animals. If in the following seven days no indications of foot-and-mouth disease developed in any of the test animals the same grouping of the show cattle followed for subsequent tests which were undertaken in turn with saliva, urine,

vaginal discharge, milk, and scrapings from the interdigital space and around the coronary band of each recovered animal. During the execution of these tests it was considered advisable to remove only a sufficient quantity of the manure and litter to prevent undue accumulation and to assure satisfactory sanitation, the object being to afford the susceptible animals an opportunity for infection with the virus, if such should be present in the feces. These tests continued until May 9. On April 8, 50 hogs were placed in temporary pens within the enclosure and fed on milk from the show cows and also allowed to consume the leavings and droppings from the cattle.

As a result of these tests no lesions of foot-and-mouth disease were produced, nor were any of the dire results, promised by some apprehensive individuals witnessed, such as the production of tetanus, malignant edema, blackleg, necrosis, pyemia, septicemia, etc. On May 31, three weeks after the last inoculation test and seven months after the show cattle had been placed under quarantine, the latter were released by the Federal Government and permitted to move interstate subject to the regulations of the states at destination. At the beginning of the tests on March 25, 747 animals were included in the number quarantined. On May 30, at the conclusion of the experiment, this number had been increased to 752 by the addition of a number of calves. The conditions under which these show cattle were kept and the sanitary quarters in which they were confined during the period of quarantine would be almost impossible to duplicate under ordinary farm conditions while the great number of animals proportionately reduced the average cost of quarantine. Added to this, conditions permitted the removal of these animals from the infected barn and surroundings at the Union Stock Yards to the clean and sanitary quarters at Hawthorne at a very suitable time. That no virus carriers were demonstrated to exist in this herd is a definitely established fact but this does not prove that such virus carriers would not exist in other herds under like or unlike conditions. It is, however, a source of gratification to this Department, as well as to the public, that conditions allowed these valuable seed animals to be preserved by the methods adopted.

(3) Slaughter and Disinfection. With our present knowledge, slaughter and disinfection is the only satisfactory and economic measure for controlling foot-and-mouth disease in a country like the United States where the infection is not indigenous. All

authorities on the subject agreed on this point in their respective reports to the Tenth International Veterinary Congress at London, September, 1914. Thus we have the report of Professor Mettam, Principal of the Royal Veterinary College of Ireland, who states "Efforts should be promptly made to eradicate the infected centers. The animals affected and those which have been directly and indirectly in contact and which must be considered as probably infected, are slaughtered."

Professor Remmelts of Holland also claims that "Preference must by far be given to the immediate removal of virus by slaughtering diseased and suspected animals than to any other measure."

Leclainche, a representative of the French Government at this congress, likewise advocates the slaughter of diseased and exposed animals in cases where the infection has not become firmly implanted and where natural boundaries are present.

Nevermann, the highest veterinary official of Germany states in his conclusions that "the slaughter of infected herds in Germany has proved an advantageous method of fighting the disease under certain conditions." Earlier in his article he states "With their slaughter, newly appearing outbreaks may be readily controlled and thereby the unpleasant spread from such outbreaks may be avoided. I desire particularly to call attention to the magnificent results of this method attained in England and the United States."

An article by the venerable Professor Guillebau in the Swiss Veterinary Journal, 1915, claims that eradication by slaughter in the lowlands of Switzerland is indicated but not so in the mountains.

Other authorities may be quoted, and the consensus of opinion is that in a locality where it is possible to control the disease by slaughter, this method should be given preference over any other.

In view of these facts and the results achieved in the present and former outbreaks of the disease in the United States, can any one doubt that the measures pursued in this country were not the most suitable for the conditions, especially so if the danger from virus carriers is given due consideration. And it would be desirable for legislative bodies and others to reflect that kind of co-operation that checked and suppressed one of the most infectious animal diseases in the world can be used effectively against other enemies of the livestock industry. Notwithstanding this, certain critics of the Bureau are making similar attacks on the foot-and-mouth eradication work as they did years ago against tuberculosis control work.

Were these criticisms to be heeded, foot-and-mouth disease would unquestionably be saddled on this country to-morrow, as tuberculosis is to-day.

Detailed Measures to be Adopted

Veterinarians in all branches of the profession should constantly be on the lookout for the disease. Notwithstanding the department has taken every practicable precaution to eradicate the infection and to prevent the introduction of the disease into this country, the infection may recur or again be introduced from abroad. If in the examination of animals any condition may be found that arouses suspicion of foot-and-mouth disease, a careful inspection should be made of the mouth, feet, teats, udder and perineum for specific lesion of the disease. The only specific lesion is the vesicular eruption, but next in order of importance in diagnosing the disease is the erosion, showing abrupt borders which cause it to present a punched out appearance.

The examination should not be confined to the suspicious animals, but should include all susceptible animals of different species on the farm, and if the suspicion of foot-and-mouth disease is strong, the inspection should extend to animals on adjacent farms. The number of animals affected, and a description of the lesions should be noted. Special inquiry should be made into the history of the condition, and all information available should be considered with the view of ascertaining if there is any evidence of contagion.

In all cases even where there is only slight grounds for suspicion of a new outbreak of foot-and-mouth disease the matter should be promptly reported by wire to the chief of the bureau and the state veterinarian and a detailed written report should be forwarded as soon as possible. This report should include a description of the lesions, and their location, the number of susceptible animals of each species on the farm, the number of animals of each species affected, the temperature record, and the history, including the evidence, if any, of contagion. At the same time there should be forwarded to the department, in tightly sealed containers, material immersed in equal parts of glycerine and boiled water for microscopic and inoculation purposes. This material should include the contents of vesicles where available, and where this material is not available, specimens from the freshest erosions or ulcers should be forwarded.

In all instances where a positive diagnosis cannot be made, but where there is suspicion of foot-and-mouth disease, veterinarians should proceed immediately without waiting for a reply to their report to make inoculation tests on hogs or calves, but preferably yearling calves, in order to ascertain whether the disease is transmissible.

It will no doubt be of interest to this association to learn more of the details which have been adopted in the present campaign of foot-and-mouth eradication.

As soon as the diagnosis had been confirmed, the proper state authorities and the Bureau of Animal Industry designated qualified veterinarians to take charge of the work of eradication for their respective governments. These inspectors-in-charge of the eradication of the outbreak promptly requested sufficient supplies and necessary help from the head offices, and co-operated from the beginning in ascertaining the extent of the outbreak, as well as in formulating and enforcing quarantine regulations. The state authorities were requested to quarantine the infected premises immediately, and to place a guard on each of such premises day and night to see that the quarantine was preserved. The owners of the affected herds were fully instructed concerning the nature of the disease and importance of maintaining a strict quarantine. The owners of adjacent farms were similarly notified and instructed in order that they would take precautions to protect their herds against infection. The stock yards in the infected districts were closed immediately and creameries and cheese factories investigated to see that skim milk, butter milk, and whey were being properly sterilized before being returned to farmers; otherwise they also were closed. The widest publicity was given to the outbreaks from the beginning through the daily papers and the distribution of posters, special circulars and similar literature. Public meetings of farmers and stock men from the territory bordering the infected area were called to discuss foot-and-mouth disease, and methods to be employed in eradicating it with particular reference to the duties of livestock owners, and what would be expected of them. Stock owners from infected farms or adjacent premises were discouraged from attending these meetings as all necessary information was carried to them by inspectors making farm to farm inspections. The veterinary inspector in charge of this work requested representatives of state authorities, members of live stock associations and interested livestock owners of the community to speak at these meetings.

Arrangements were made immediately for the transportation of employees and their equipment so there would be no delay when the assistants arrived. As soon as an expert on car tracing arrived a report was secured of all live stock shipments that had been made from the community since the disease appeared. All suspicious shipments were traced to destination and back to the farm where the stock originated in order to ascertain if there was any probability that they were infected when shipped. These precautions were taken to limit the spread of the disease as quickly as possible.

The veterinary inspectors located at various public stock yards were informed immediately by phone or wire of any diseased, suspicious, or exposed animals that were shipped from the infected community to public stock yards. A record was made of all live stock cars that carried infected or exposed animals out of the infected district, and arrangements made with the various railroad companies for the cleaning and disinfecting of such cars before they were again used.

An investigation was made immediately to determine if possible the source of the infection in order to prevent another outbreak from the same source but with negative results. Other veterinary inspectors were detailed immediately to scout in the community wherever rumor or suspicion led in order to locate and quarantine all infected herds as soon as possible. In addition to the scouts, other veterinary inspectors were detailed to make a careful systematic inspection of all live stock within a radius of three miles or more of the infected premises.

In cases where foot-and-mouth disease is reported by one veterinary inspector, the diagnosis should be confirmed by at least one other veterinary inspector. After the diagnosis has been confirmed, the animals should be appraised and arrangements made to dispose of the affected herd as soon as possible to prevent further spread of the disease. The appraisals are usually made by the two appraisers working together, one a representative of the state, the other the representative of the Department of Agriculture. Care should be exercised in selecting appraisers in order to see that only men of proper temperament, good judgment, and who are familiar with the value of different classes of live stock are chosen for this duty. The digging of the trench should be commenced immediately. The owner of the affected herd should if possible, be induced to take the contract to dig the trench. A lay inspector should be detailed to

supervise the digging and should be instructed to remain on the premises until the work is finished. It has been demonstrated during the last outbreak that the smaller trenches can be dug as quickly and more cheaply when picks and shovels are used, as when teams, plows, and scrapers are employed. If the owner of the affected herd refuses to dig the trench a contractor should be hired at an agreed price of so much per cubic yard. In all instances the dimensions of the trench should be specified in writing and the contractor notified that settlement will be made on this basis. If the herd is small and the animals are docile the ends and sides of the trench should be perpendicular. If the herd is large time can be saved by sloping one or both ends of the trench so the animals can be driven into it and there slaughtered. In digging trenches of this kind, they should be seven feet deep, seven feet wide, and long enough to allow comfortable standing room for the cattle. Usually there is room in the trench of this size for the additional small number of hogs and sheep found on the average farm, allowing two hogs or sheep for each cow. Where there is an unusual number of hogs or sheep in proportion to the number of cattle additional space should be provided in specifying the length of the trench.

The method of slaughter consists of shooting the animals while they are standing on the fresh dirt at the side of the trench and then rolling them into it, or driving them into the trench and shooting them there. The latter method of handling the animals is preferable in disposing of large herds as considerable time and expense is saved and the surrounding ground is not contaminated with infection from escaping blood, saliva, etc.

The hides of all carcasses should be thoroughly slashed, and the abdominal cavity opened to allow the escape of the viscera. This work should be done after the carcasses have been deposited in the trench. After the hides have been slashed and the abdominal cavity opened, the carcasses should be covered with freshly slacked lime. A barrel of lime to every eight cattle, or fifteen sheep, or hogs of the varying sizes usually found on farms, is considered sufficient. If the animals are large an additional proportion of lime should be used. Since the carcasses are to be buried under a good depth of earth a great deal of lime is not considered necessary. The trench should be filled immediately after the affected animals are slaughtered and a representative of the department or state should be detailed to remain on the premises to supervise this work, and to supervise the

disinfection of the implements and clothing of all men when the work is finished, before they are permitted to leave the premises.

No more men than necessary should be kept from other work to do the slaughtering. One inspector in charge and three lay inspectors, as assistants, are sufficient to constitute a slaughtering crew. The owner of the affected herd is expected to furnish additional assistance if it is required. During the last outbreak of the disease four killing crews of this size have disposed of as many as twenty-eight herds in one day. A rifle of .25-20 caliber or some similar gun is a very satisfactory weapon for dispatching the animals.

After the herd is slaughtered and buried, the infected premises should be cleaned and disinfected without delay. A disinfecting crew consisting of an inspector in charge, a lay inspector assistant, and from seven to nine laborers, has been found most satisfactory, efficient and economical. The lay inspector assistant should be competent to take charge of the crew during the absence of the inspector in charge.

The inspector in charge of the disinfecting crew, his assistant and the two nozzle men should be supplied with a complete rubber outfit, consisting of coat, boots, hat and gloves. Overalls and jumpers should be provided for the remainder of the crew. These outer garments should be removed at the end of each day's work, and left on the premises and before moving to another farm or other premises they should be thoroughly fumigated. In order to hasten the work of the cleaning and disinfecting of infected premises, the inspector in charge of the disinfecting work should precede his crew with a view of planning the work in advance and inducing the owners to haul out the manure and clean the barns and other outbuildings preparatory to disinfection.

The usual supplies used in combating an outbreak of foot-and-mouth disease are dress-suit-cases, rubber goods, such as boots, coats, hats, gloves, fumigating capes, also sponges, permanganate of potassium, formaldehyde, bichloride of mercury tablets, compound cresol solution, chloride of lime and pumps. For each pump there should be ordered 100 feet of 3-ply steam hose and attachments, two spraying nozzles, and an extra supply of leather valves. Implements such as, shovels, forks, hoes, scrapers, picks, crowbars, and axes, etc., used in connection with the cleaning of the premises before disinfection must also be procured.

The equipment should also include containers for carrying enough disinfectants for the day's work. Milk cans for liquid disinfectants and a tight sugar barrel for chloride of lime have been found satisfactory. On arriving at infected premises the inspector in charge of the crew should first make an inspection to ascertain whether it is necessary to destroy any property in order to get rid of the infection. Only such property should be destroyed as is necessary to rid the premises of infection.

A record should be made of all property destroyed, giving the measurements, kind, and quality. The owner or his representative should be requested to be present when the measurements are taken or other records made of property destroyed, and before leaving the premises the inspector and owner should jointly sign the report of property destroyed. This precaution should be taken in order to avoid subsequent controversy in adjusting claims.

On receipt of reports of property destroyed the inspector in charge of the station should inform himself regarding the prices of hay, straw, lumber, etc., in the community where such property was destroyed and in settling claims, allow prices accordingly, making fair allowance for waste in replacing lumber and for hardware, etc.

Floors, mangers, stanchions, etc., should not be torn out and destroyed if it is possible to disinfect them effectually, for less than it would cost to tear them out and replace them. In disinfecting barns, stables, etc., the condition of the lumber of which the floors, mangers, partitions, etc., are constructed, the time they have been exposed and the opportunity for infection should be taken into consideration, and it should also be borne in mind that if the virus of foot-and-mouth disease can be reached by disinfectants it can be killed without destroying the lumber or other material that harbors it.

Those portions of hay mows, hay stacks, and straw stacks that are infected from animals feeding from the sides or trampling upon such forage, should be removed by cutting or otherwise and the remaining surfaces raked after which they should be sprayed with a 4% formaldehyde solution. The hay and straw removed from the infected stacks should be burned. The owner should be induced if possible to haul out and spread all the manure from the stables and from around the buildings after it has been properly disinfected. This manure should be spread in fields not accessible to animals

susceptible to foot-and-mouth disease, preferably on fields to be plowed. If the weather conditions are unfavorable for spreading manure, it may either be hauled or piled, or sprayed with a disinfectant, the surface forked over from a depth of 6 to 10 inches, sprayed again, and left until the weather is favorable for its removal. Manure that is hauled out and piled should be covered with freshly slacked lime or a chloride of lime solution or a layer of six inches of uncontaminated horse manure, and fenced about with a pig-proof fence. After the removal of the manure the ground upon which it has lain should be limed and left exposed for at least 60 days.

Disinfection can be most successfully and easily accomplished when the buildings have first been thoroughly cleaned. All litter and manure should be removed from the barn floors, entries, feed rooms, and stables. Ceilings or other construction over stables should be swept, dirt and dust removed from sills, mangers, and feed troughs, walls and partitions swept, and the lower parts of partitions removed to facilitate the cleaning and disinfecting of floors. Those portions of posts, stanchions, etc., contaminated by infected saliva should be scraped or scrubbed with a hot solution of sal soda. Manure should be removed from cracks between the floor planking and the badly decayed flooring should be removed and burned. Where floors are in poor condition and have been exposed to the infection for sometime, it is considered advisable to scrub them with a solution of sal soda before applying the regular disinfectants used, or the planks may be taken up and dipped in the disinfectant. It is not necessary to destroy the lumber unless it is badly decayed.

A spray pump is the most satisfactory and effective means of applying disinfectants to large surfaces such as walls, ceilings, manure piles, hay stacks, straw stacks, etc.

Care should be exercised in selecting suitable disinfectants. A solution of formaldehyde is considered most suitable for hay, straw, harness, blankets, feed bags, lap robes, and finished surfaces of walls, ceilings, etc.

Chloride of lime is very satisfactory for outside disinfection where there is plenty of air; for instance, manure piles, open sheds, stock pens, ground, etc., but the fumes are irritating and deleterious to those who attempt to spray with it in closed buildings. Compound cresol solution or carbolic acid is most suitable in disinfect-

ing stables, feed rooms, entries, etc. Formaldehyde gas is suitable for disinfecting dwellings, clothing, root cellars, milk houses, granaries, feed, etc. Such articles as tie-chains, halters, feed bags, cloth lap robes, harness, fly nets, etc., should be dipped in the compound cresol solution as it is practically impossible to reach all surfaces by spraying.

Dogs and poultry that have had access to infected stables, manure piles, etc., should be dipped in a 2% solution of compound cresol.

At least two and frequently four or five systematic inspections should be made of all live stock in the neighborhood of infected premises. The first inspection should commence as soon as the affected herd is discovered and it should extend for two or three miles in every direction from the infected premises. Not more than fifteen days should intervene between the first and second inspections, and the second inspection should be extended to include all susceptible animals within a radius of five miles of the infected premises.

Each inspector should keep a record in a field book provided for the purpose of all inspections made. This record should show the name of the liveryman who furnished the rig, the price, the name of each owner of animals inspected, number of animals of each species inspected and the condition of the animals when inspected. The veterinary inspector detailed to make the second or subsequent inspections should have with him a record of the previous inspections to guide him.

Inspectors detailed to make farm to farm inspection should each be provided with a dress suit-case, rubber goods including hat, coat, gloves, boots, fumigating cape, thermometer, flash-light, sponge, bichloride tablets, permanganate of potassium and formaldehyde.

Inspectors on reaching the premises where live stock is to be inspected should always put on their rubber outer garments before, or immediately on alighting from their conveyance. They should always thoroughly disinfect their rubber garments before leaving the premises. If foot-and-mouth disease is found or any condition that is suspicious of foot-and-mouth disease, the inspector should in addition to washing his rubber garments, fumigate his clothing with formaldehyde gas before leaving the premises. The greatest care should be exercised to prevent carrying infection from diseased to healthy herds and to avoid criticism on account of apparent carelessness.

Headquarters should be centrally located if possible. If the outbreak extends over a large area the territory should be divided into districts, and a substation established in each district. A competent veterinary inspector should be detailed to take charge in each district. He should be furnished with the necessary assistants and equipment and he should be held responsible for the efficient conduct of the work in his district. At the end of each days work the inspector in charge of each substation should be required to make a report to headquarters by phone, or wire or otherwise, showing:

1. Number of new infected herds discovered.
2. Number of herds slaughtered.
3. Number of herds awaiting slaughter.
4. Number of herds appraised.
5. Number of herds awaiting appraisal.
6. Number of trenches ready.
7. Number of trenches digging.
8. Number of premises disinfected.
9. Number of premises where herds have been slaughtered, and premises are ready for disinfection.

When this knowledge has been collected for his entire district, the inspector-in-charge should forward these facts in a night letter telegram to the Washington officials for their information.

As a matter of interest, the following tables are presented which give the number of herds slaughtered by months, including August, in the work of foot-and-mouth disease eradication, 1914-15, and also the number of animals slaughtered by states up to July 15, 1915, together with fiscal statistics:

October	139 herds
November	1101 herds
December	893 herds
January	186 herds
February	359 herds
March	308 herds
April	32 herds
May	3 herds
June	0 herds
July	6 herds
August*	16 herds

*Up to August 22, 1915

REPORT OF ANIMALS SLAUGHTERED AND STATISTICS
ERADICATION OF FOOT-AND-MOUTH DISEASE, 1914-15
To July 15, 1915

STATE	HERDS	OWNERS	PREMISES	CATTLE	SWINE	SHEEP	Goats	Total Number of Animals	TOTAL APPRAISED VALUE	BURIAL EXPENSES	PROPERTY DESTROYED IN DISINFECTING	DATE OF DISCOVERY	DISINFECTION COMPLETED	NO. OF COS.
Connecticut	33	33	32	733	143	0	0	876	$ 48,366.10	$ 2,358.46	$ 1,341.39	Nov. 19	Apr. 11	3
Delaware	12	12	12	152	49	22	0	223	8,067.76	1,325.10	509.50	Nov. 6	Dec. 31	1
Dist. of Col.....	3	3	3	48	5	0	0	53	3,207.00	215.00	10.80	Nov. 16	Mar. 2	...
Illinois	768	754	709	24,338	33,434	1,248	22	59,042	1,995,244.48	66,471.19	99,287.60	Nov. 1	Apr. 23	52
Indiana	120	115	106	2,355	3,871	615	0	6,841	178,552.75	4,315.93	1,689.06	Oct. 15	Mar. 2	19
Iowa	48	48	43	1,547	2,334	32	0	3,913	125,277.38	4,359.22	1,329.48	Nov. 5	Mar. 22	9
Kansas	6	9	6	1,217	313	0	0	1,530	78,921.98	1,629.74	103.86	Feb. 5	May 6	4
Kentucky	84	79	73	2,951	918	216	1	4,086	134,260.00	2,362.50	1,191.55	Nov. 9	June 18	11
Maryland	56	56	49	964	1,621	197	0	2,782	64,207.34	3,339.66	6,201.26	Nov. 3	May 15	10
Massachusetts	98	96	94	2,107	5,705	77	11	7,900	230,768.13	8,631.77	8,489.76	Nov. 5	Apr. 22	9
Michigan	272	271	239	2,947	3,993	852	0	7,792	210,175.84	5,381.21	1,517.50	Oct. 15	Mar. 18	16
Montana	32	32	15	1,408	11	237	0	1,656	67,492.70	861.12	77.50	Nov. 7	Jan. 3	3
New Hampshire...	3	3	3	78	26	0	0	104	4,959.50	189.95	279.50	Nov. 29	Jan. 28	1
New Jersey.....	50	49	49	1,314	815	9	8	2,146	123,006.88	952.95	1,570.22	Nov. 9	June 9	8
New York.....	180	193	163	5,410	489	150	38	6,087	442,308.37	10,076.39	7,360.65	Nov. 4	May 18	20
Ohio	222	221	204	4,019	4,994	3,136	1	12,150	363,100.41	12,744.54	2,657.82	Nov. 3	Apr. 2	39
Pennsylvania	904	858	795	14,989	12,055	369	17	27,430	934,197.61	17,684.88	77,958.40	Nov. 1	Apr. 29	34
Rhode Island.....	59	58	54	988	375	33	0	1,396	68,950.50	5,164.63	2,418.12	Nov. 7	Mar. 24	3
Virginia	8	8	6	378	470	0	0	848	26,052.60	500.44	896.54	Nov. 12	Mar. 20	3
Washington	1	1	1	102	0	0	0	102	4,050.00	.....	.....	Nov. 16	Nov. 21	1
West Virginia....	22	22	14	193	189	114	0	496	12,813.16	458.84	1,308.44	Feb. 26	Apr. 12	3
Wisconsin	40	40	37	1,504	1,764	1,435	1	4,704	119,158.06	6,025.70	3,959.56	Nov. 4	Mar. 21	12
TOTALS.....	3,021	2,961	2,707	69,742	73,574	8,742	99	152,157	$5,243,138.55	$156,049.22	$220,158.51			

(To be continued)

THE SUCCESS AND FAILURE OF THE TUBERCULIN TEST IN CERTIFIED DAIRIES*

C. L. ROADHOUSE, Berkeley, Cal.

In the course of several years supervision of six certified dairies in the San Francisco Bay region for the San Francisco County and Alameda County Medical Milk Commissions by members of the Veterinary Division of the University of California, considerable data has been collected which should be of concern to those interested in the tuberculin test.

These dairies offer special advantage for such observations because the herds are constantly under supervision and regulation with respect to tuberculosis and other diseases. The animals have been pastured on ground used only for healthy animals and purchased stock has not been admitted on the premises until it has passed the test.

There is also satisfactory co-operation on the part of the owner in most certified dairies which makes the results more reliable than they would likely be on an equal number of animals from other sources.

The methods of supervision in the certified dairies in this section are as follows:

1. Limiting the purchase of stock to herds where less than 10 percent. of the animals react to the tuberculin test.
2. Semi-annual tests of all animals, alternating the subcutaneous and intradermal methods of testing.
3. Placing the responsibility for the health of the animals upon one individual. (The monthly veterinary inspections required by the Medical Milk Commission is designed to detect physical cases of tuberculosis as well as other diseases. However, in certified dairies physical cases seldom occur.)

"THE TEN PERCENT RULE." When this work was begun in 1905 Ward and Haring followed the practice, which was then approved in this county, of allowing all purchased animals passing the test to be added to the certified herd. However, it was soon learned here, as elsewhere, that it was not possible to reduce the number of reacting animals in the herds at subsequent tests by such procedure when purchases were regularly being made. This led to the intro-

*Presented at the meeting of the A. V. M. A. Section on Sanitary Science and Police, Oakland, Cal., September, 1915.

duction of what has here been termed the "Ten per cent Rule", the effect of which has been to limit the purchase of animals to smaller herds, as experience has shown that it is very difficult to find large herds of dairy cows in this state that would show less than ten per cent of reactors. It is possible to violate the spirit of the ten per cent rule by purchasing a single cow or a few cows from several owners, but this has not been done where the dairymen purchase the stock from the original owner, as they have become impressed with the value of this rule in lessening the danger of reactions at subsequent tests. Even with the enforcement of the ten per cent rule, which must be regarded as stringent in the purchase of stock, it has been found that of the 82 reacting animals removed from the various dairies during the past year, 65 of them, or 79.2 per cent, have been purchased during the last three years. This result, together with the fact that it is difficult and expensive to locate and buy cows from herds where less than ten percent of the animals react, has encouraged the dairymen to raise more calves from their own herds. Tuberculosis in calves raised in certified dairies is as follows:

HEALTH OF CALVES RAISED IN CERTIFIED DAIRIES

	No. of Calves raised	No. of these Calves raised on milk from tested cows	No. of these Calves reacting
Dairy No. 1	4	4	0
Dairy No. 2			No report
Dairy No. 3	150	150	1
*Dairy No. 4	200	200	27
Dairy No. 5	20	20	0
Dairy No. 6	60	60	0

Although the number of animals raised is limited to 434 the result is significant.

SEMI-ANNUAL TUBERCULIN TESTS. Alternating Subcutaneous and Intradermal Methods. As every attempt is made to minimize tuberculosis in certified dairies, it is the practice in the SanFrancisco Bay region to test all animals at six month intervals. The subcutaneous test was used exclusively until the second half of 1914 when the intradermal method of testing was introduced. The following data for each dairy shows the results from the two methods of testing:

*Dairy No. 4 showed 18% of cows in the herd reacting at the time of the first test. The first lot of calves were fed refuse hay from the mangers of the dairy barn.

RESULTS FROM SUBCUTANEOUS AND INTRADERMAL TUBERCULIN TESTS IN CERTIFIED DAIRIES

	No. animals tested	No. animals condemned	Percentage condemned
DAIRY No. 1			
Subcutaneous Test *June, 1914*	132	1	.7
Intradermal Test *December, 1914*	125	7	5.6
Subcutaneous Test *June, 1915*	131	3	2.29
DAIRY No. 2			
Subcutaneous Test *February, 1914*	259	12	4.6
Intradermal Test *September, 1914*	279	16	5.7
Subcutaneous Test *March, 1915*	298	10	3.3
DAIRY No. 3			
Subcutaneous Test *January, 1914*	315	5	1.5
Intradermal Test *July, 1914*	330	16	4.8
Subcutaneous Test *January, 1915*	350	4	1.1
DAIRY No. 4			
Subcutaneous Test *May, 1914*	196	15	7.6
Intradermal Test *November, 1914*	172	9	5.2
Subcutaneous Test *May, 1915*	204	8	3.9
DAIRY No. 5			
Intradermal Test *November, 1913*	39	0	0
Subcutaneous Test *June, 1914*	43	1	2.3
Subcutaneous Test *January, 1915*	36	0	0
DAIRY No. 6			
Subcutaneous Test *December, 1913*	66	1	1.5
Intradermal Test *July, 1914*	135	7	5.1
Subcutaneous Test *January, 1915*	142	1	.7

A summary of the above is given in the following table:

Animals Tested During First Half of 1914 by Subcutaneous Method

No. animals tested	1011
No. animals reacting	35
Percentage reacting	3.4

Animals Tested during Second Half of 1914 by Intradermal Method

No. animals tested	1080
No. animals reacting	55
Percentage reacting	5.0

Animals Tested during First Half of 1915 by Subcutaneous Method

No. animals tested	1161
No. animals reacting	26
Percentage reacting	2.2

The point of greatest significance from the above data is shown in the summary. To the subcutaneous test of 1914, 35 animals, or 3.4% reacted. The intradermal test, made six months later on the same animals, showed 55, or 5% reacting. As there were more than 1000 animals included in this result, the statement made by Haring and Bell that the intradermal test is somewhat more searching in its diagnosis of incipient cases of tuberculosis in animals than the subcutaneous test would seem to be supported.

Responsibility for the Health of the Herds. The Medical Milk Commissioners have insisted that all tests and examinations of animals be conducted by the official veterinarian, or under his direct supervision. The reasons for this procedure are manifold: first, it fixes the responsibility upon one individual; second, it leads to uniformity in technique and interpretation; third, specialization is developed, increasing the accuracy of the work; fourth, the filing of uniform records at a central point for a period of years makes it possible to accumulate data of value which is a guide for the future. Identification cards are preserved for all animals in the various herds and ear tags are recorded, and such details can best be done by the man who is doing such work regularly.

The Failure of the Tuberculin Test in Certified Dairies. During the past year one of the largest certified dairies in the eastern part of the United States has had certification temporarily withdrawn on account of tuberculosis developing among the animals in the herd. The Board of Veterinary Experts (Moore, Klein and

White) appointed by the Milk Commissioners* reported that the most important source of infection in the herd was from animals purchased and added to the herd. They state that "All cows were tested with tuberculin at the time of purchase and only those that passed the test were shipped to the farm. The cows which were purchased were from herds that had been assembled by dealers." During a period of four and one-half months 111 animals were purchased. These animals when tested one year later showed 55 reacting, or 49.5%. There are other conditions which are reported to have contributed to the spread of the infection, but it was the failure of the tuberculin test, to detect tuberculosis in purchased stock no doubt that led to the withdrawal of certification at the time. If the ten per cent. rule enforced under our supervision, or some similar restriction on the percentage of reactors allowed in a herd from which stock was purchased, had been followed, we believe that the risk of an occurrence of this kind would have been greatly reduced, except in those cases where unscrupulous methods were used by the person selling the animals. From this incident we must be impressed with the great risk that is taken where there is permitted the wholesale and promiscuous purchase of stock for admission to a healthy herd, subject to the tuberculin test.

Some of the recommendations of Moore, Klein and White in the report, to which I have referred above, deserve mention:

1. That the ———— Dairy Company extend as rapidly as possible the plan which they have recently instituted of raising cows to replenish the herd and that the practice of purchasing cows for the dairy be discontinued as soon as possible.

2. That until sufficient cows can be raised upon the farm extreme care be exercised in purchasing new cows. By "extreme care" we mean that insofar as is possible cows be purchased from herds that are free from tuberculosis, and that the purchase of cows from miscellaneous lots of cattle assembled by dealers be discontinued.

3. That all animals not obtained from tuberculosis-free herds be required to pass a tuberculin test before purchase and that they be segregated from the herd until they have passed a retest, which should be made two or three months after their arrival at the farm, a double dose of tuberculin being used.

*Twenty-sixth Report of the Medical Milk Commission of Essex County, N. J.

4. That a test of the entire herd be made regularly at intervals of approximately one year.

These recommendations are in accord with the procedure followed in this region, with two exceptions: first, the ten per cent rule is used in the purchase of stock, rather than the segregation of such animals from the herd and their retesting three months later: and second, *semi-annual* tests of all animals in the herd are made, rather than the annual testing recommended by them. When stock is purchased it is usually because there is an increased demand for milk. It would, therefore, not be expedient in such case to segregate purchased animals for three months before they could be used for certified milk production, and, if this were insisted upon, it would increase the cost in maintaining such herds, which we believe the ten per cent rule avoids.

From our results, we feel that a proper restriction in the number of reacting animals which there may be in a herd from which animals are to be purchased, with semi-annual tests, is as safe as the segregation above mentioned and that it is less burdensome to the dairy owners.

—o—

ABSTRACT OF DISCUSSION.

DR. TORRANCE: I would like to ask Dr. Roadhouse what was the method of disposing of these animals? Were they slaughtered, and if so, were post mortems made to confirm the test or not?

DR. ROADHOUSE: The milk commission made no disposal of these animals but recommended to the owner that they be slaughtered and that the animals be posted where it was possible. Of course, in most cases, the animals were slaughtered at the completion of the test and the lesions sought for. The owners have been satisfied with the results, and now they usually do not ask this. In the regular routine it increases the labor to make post mortems, and post mortem examinations are held only when the owner requests it. The owner is encouraged to sell such stock for beef, but the milk commission has no authority over them as long as they are removed from the premises. Usually they were sold for beef by practically all six dairies, but where the number of reactors is large as in the case where one dairy had 35 animals and 15 reactors among them, by the intradermal test, the owner felt that the loss was too great, and I know this particular man sold these animals to other dairies, which is done, no doubt, in other places. There is nothing to prevent it, at present, in California.

DR. KINSLEY: I would like to ask the Doctor if the premises were disinfected after the first subcutaneous test, before the animals went into the same stalls, to be milked?

DR. ROADHOUSE: It is one of the rules of the milk commission that the stalls and mangers be disinfected at the close of each test. This is carried out under the supervision of the inspection department.

DR. KINSLEY: It is rather hard, it seems to me, to interpret the findings. It is certainly unfortunate that we have not the lesions of these reactors to go with the reports to verify the different tests.

In the state of Missouri, particularly around Kansas City, all cows going out for dairy purposes are tested. Those going to the Kansas side are given the subcutaneous test, and those going to the Missouri side are given the intradermal test. In the last three years for the Missouri side, we have tested some 6000 cattle. For the two years preceding this one, about 4500 head of cows were tested. They have been re-tested twice. The dairies are tested once a year by the intradermal method. Of the 2800 and some odd head tested last year, we got 23 reactors, 22 of which showed distinct lesions when killed under government supervision at our Kansas City packing houses. Of the remainder, something over 2800 went in our dairies and were tested during January, February and March of this year, one of those 2800 reacted, and showed lesions on post mortem examination. It is possible and quite probable that we give the tuberculin test to cattle that have been tested within a week or ten days, and yet our findings, I think, have been remarkable on the re-test when one animal in 2800 reacted under such circumstances.

Now in the year previous out of 2800 head not a single reactor was found the first year; with something like 1300 of the 1800 the second year tested, not a single reactor. Perhaps it is in our lack of efficiency in making the test, but we find that our percentage of reactors is practically the same as the subcutaneous reactors in the same class of animals in the yards.

DR. MCNAIR: I would like to ask Dr. Roadhouse or other gentlemen doing work along this line what in his judgment is the value of auscultation or the examination of pharyngeal secretions in the detection of tuberculosis.

DR. SIMMS: I would like to know if Dr. Roadhouse has the hypodermic needle which he uses. I have made the test and always had difficulty with the needles I used. They are not satisfactory.

DR. DAY: I would like to ask Dr. Roadhouse which test he finds the most practical, the subcutaneous or the intradermal? It is a question in our state as to the practicality of it—the time consumed in applying the tests. The accuracy of it, I think, is pretty well tested, but it is a question as to which is the most practical.

DR. DALRYMPLE: I would like to ask Dr. Roadhouse if he found any difference in the season of the year in which he made the tests? That is, the hot or the cold season?

DR. ROADHOUSE: I wish our cattle in California were as free from tuberculosis as the animals which have been reported from Missouri, or Kansas City. Dr. Kinsley has been fortunate in coming in contact with animals which are quite free from tuberculosis. I would like to ask Dr. Kinsley if these were beef animals or dairy animals?

DR. KINSLEY: Cows used in the ordinary dairies in and around the city.

DR. ROADHOUSE: Usually in California when we test that kind of stock, especially if they are in dairies that have a hundred animals or more, we find from 20% to 30% reacting.

DR. KINSLEY: We test our cows every year, and the reacting animals are sold to the packing houses.

DR. ROADHOUSE: In checking the intradermal and subcutaneous methods as Dr. Kinsley has testified, the results seem quite good. In this testing, may I ask, if the best animals which were re-tested by the intradermal method were given the subcutaneous test also?

DR. KINSLEY: On the Missouri side of the state line, we used the intradermal test once a year, testing all dairy animals supplying milk in Kansas City.

DR. ROADHOUSE: Do I understand that you sometimes use the subcutaneous test?

DR. KINSLEY: No, the state line divides Kansas City, Missouri, and Kansas City, Kansas, and our stock yards are on the line. The cows going to Kansas are checked and tested by the subcutaneous method.

DR. ROADHOUSE: Then you did not check the intradermal test as against the subcutaneous?

DR. KINSLEY: No. Not in the last six or seven years. We do sometimes get cows in Missouri which have been recently tested in Kansas, according to the Kansas regulations.

DR. ROADHOUSE: From the report which Dr. Kinsley gives from his section, it would seem that he did not talk upon the point I thought he referred to. It was a question concerning the results from the intradermal test as compared with the results from the subcutaneous test, which I was interested in.

DR. RUTHERFORD: I would like to ask whether any note was made of the proportion of the newly purchased animals which reacted after the second test. Six months later you tested 1080 cattle. If you tested 1080 there must have been 104 newly purchased cattle. What I wanted to know was whether in your testing, you had checked the number of newly purchased cattle which reacted as against the old stock which had already passed the test?

DR. ROADHOUSE: It was checked only in this way: in the data which I gave, where the effort was made to determine what percentage of reacting animals were from the animals recently purchased, as I gave in the report, 82 animals reacted during the past year (July 1, 1914 to July 1, 1915). Of these 82 reacting animals,

65 I believe was the number, or 79% of them, were from animals which had been purchased during the last three years,—not during the last year.

DR. RUTHERFORD: You say you had 976 cattle that had passed the test and were presumably free from tuberculosis. To those animals you added 104 new animals. What percentage of the newcomers reacted to the second test? That is the point I would like to get at. I have had a good deal of experience in cleaning up dairy herds, and I must say, like you, I was more than delighted to hear of the astonishing success attending the work in Kansas City, as I never ran across anything like that. It certainly speaks well for the health of the stock in Missouri and Kansas. I don't think we would find that condition anywhere else, on this continent or the old world either. I was particularly interested in endeavoring to discover how much of the disease had been introduced by these newcomers.

DR. ROADHOUSE: That question I think I can only answer by the figures I gave, that 79% of reactors last year were from purchased animals within the last three years. I have not the figures except in that form.

DR. RUTHERFORD: That would imply, I suppose, that the great majority of those reactors to the second test were cattle that had been purchased in the interval between the first and the second test.

DR. ROADHOUSE: When this work was done it was not with the idea of preparing a report for this meeting, so that I am obliged to take only such results as our records show, and that question can be answered only in the general statement which I made about purchased animals.

In reply to Dr. McNair's question as to whether any work was done in the matter of pharyngeal secretions: I can say that it is not a part of the routine work, and as the work is not done as an investigation, we cannot make any report on that.

There are two bulletins which have been published within the last two years, one by the California Agricultural Experiment Station by Haring and Dow, and one in Montana by Welch, and both of these bulletins show the apparatus which they used in this work. I might say that a very small dental syringe is the type used with the intradermal method and to that is attached a needle about one-fourth inch in length and the injection is made in the folds of the dermis, so that the needle is not long enough to pass through the skin.

DR. SIMMS: I wrote to Dr. Welch and he said the one which he illustrated was not a satisfactory syringe, and that he had been looking for years for the right thing but had not found one which exactly suited him.

DR. ROADHOUSE: I find the syringes usually made and sent out by the biologic people are not durable. A 6 c.c. subcutaneous syringe is put up for the subcutaneous test, fortunately the threads

of the small needles which we can purchase will screw onto the 6 c.c. syringe, and will be tight if a few rounds of thread are wrapped in the threads of the syringe, and with care in connecting the small needle with the large 6 c.c. syringe, we are able to inject 30 to 40 head with one syringeful, and it works satisfactorily, because the larger syringe is more durable.

In answer to Dr. Day's question as to which test is the most practical, I would say a review of the work which has been done by the men mentioned and others would lead us to believe, that animals will react through the intradermal test in certain cases which do not react to the subcutaneous, and in other cases animals will react to the subcutaneous test which have failed to react under the intradermal; that with the proper interval between the tests, the actual number of reactions, in a given herd, results when both methods are used. Writers on the intradermal test recommend it particularly for range cattle because it is not easy to conduct the subcutaneous test on relatively wild animals, and for animals which have high temperatures. It may also be used for hogs, as their temperatures are irregular from handling, and young stock which are not suited for the subcutaneous test. It also seems to be considered preferable to the subcutaneous in climates where the temperature of the air is higher than that of the animal, on account of the difficulty of keeping the thermometer down to the proper temperature,—low enough so that the subcutaneous test is reliable.

DR. KINSLEY: Mr. President, I would like to ask Dr. Rutherford, if he questions my statements, to write to our state department at Columbia and get some reliable information about the use of tests, or get some of the B. A. I. reports concerning the test in the Kansas City Live Stock Yards.

DR. RUTHERFORD: Not for one moment did I question the veracity of Dr. Kinsley's statement. I simply took the liberty of commending him on the particularly good health of the stock in his section.

AN IDEAL STATE LAW FOR COOPERATION BETWEEN STATE AND FEDERAL AUTHORITIES IN THE WORK OF ERADICATING CONTAGIOUS ANIMAL DISEASES

C. J. MARSHALL, State Veterinarian, Harrisburg, Penn.

It is the duty of the Federal Bureau of Animal Industry to prevent the introduction or spread of the transmissible diseases of animals to or within federal territory under its jurisdiction. In accordance with state rights it is presupposed that each common-

wealth is prepared and equipped to handle such diseases within its borders.

The Organic Act of May 29, 1884, establishing the Federal Bureau of Animal Industry, specifically provides for the cooperation of states and territories in the eradication of contagious, infectious and communicable diseases and in the execution and enforcement of this act. It also provides that when the properly constituted state authorities signify their readiness to cooperate for the eradication of communicable diseases, the Department of Agriculture is authorized to expend for disinfection and quarantine measures so much of the appropriation as may be necessary to prevent the spread of the disease from one state or territory to another. Furthermore, provision is made whereby any individual may furnish information regarding diseased animals and may bring violations of this act to the attention of the United States Attorney of his district whose duty shall be to prosecute such violations.

When from the nature and extent of the disease it is feared that it may get beyond the control of the local authorities and spread to other states and countries the federal government takes all possible precautions to prevent such an occurrence. The federal government has a legal right to quarantine a state and to prevent the interstate movement of livestock or anything that may carry contagion, endangering the livestock of another state or country. It cannot establish or enforce quarantines against livestock on premises or portions of territory within a state except as to the interstate movement of such livestock, neither can it force an entry or compel the destruction of animals or property. A state cannot do so unless it is provided with the necessary legislation.

Under the present organization of the federal bureau an efficient veterinary sanitary force is maintained at all times and is in readiness for emergency work. Under ordinary conditions this force of men render valuable public service in the work of meat inspection, tick and scab eradication, and are able to conduct research work on many diseases. In the past such work has proven of inestimable value to the livestock interests of the country. In cases of emergency it is always available for quick and efficient action. Each state should maintain a somewhat similar service. Such men could be used to advantage at all times. The federal government is not able to look after meat hygiene work in houses that are not doing an interstate business. It is reasonable to suppose that the

poorest class of animals is slaughtered in places not under inspection. About 60% of the cattle, sheep and hogs slaughtered in this country are subjected to a federal inspection. This leaves 40% of the meat supply of every state which is uninspected.

Milk hygiene is even more important and very little is done in the various states on this subject.

The meat and milk hygiene service, and the minor transmissible diseases of animals, that should be looked after by the state would furnish an abundance of work for a good-sized veterinary sanitary police force. With such a force it would be possible for the state to furnish trained men to co-operate with the federal forces in case of emergency. In this respect most of the states have been remiss in the past and in a great majority of cases were able to furnish no experienced, well-trained assistants to co-operate with the federal forces.

Aside from the regularly employed agents of the state and federal governments, each state should have an abundance of well-educated and efficient veterinary practitioners who may be called into public service when needed. All veterinary practitioners should be compelled by law to report promptly all dangerous communicable diseases of animals. In controlling foot-and-mouth disease the private practitioner can render most valuable service. The State Veterinarian in Pennsylvania is authorized to employ local practitioners to do any kind of work when it is deemed necessary. In this way a large number of competent men scattered over the state are in constant touch with the work of the Board. They are kept informed and are familiar with the laws and regulations, and most of them can be called upon for assistance in cases of emergency.

It is also important that the state furnish adequate means for a thorough veterinary education to a sufficient number of men to look after veterinary sanitary police measures. The day and generation have passed when men with business ability alone are considered prepared to be entrusted with matters which involve technical knowledge which they do not possess.

Practically every state loses more than five per cent. of its livestock valuation each year from preventable diseases. Veterinarians should not be criticised for inability to prevent such losses when the state provides inadequate means, or none at all, for properly training men in matters of animal hygiene and furnishes no money to control or eradicate these diseases. Very few of our

states spend any money for veterinary education. If five per cent. of the preventable losses were spent for veterinary education and veterinary hygiene work in each state, the work could be done satisfactorily and millions of dollars saved annually for other purposes.

The general plan of organizing the work of co-operation between the federal and state forces should be carefully planned and thoroughly understood by both sides when it is necessary to combine forces to handle unusual conditions, as is necessary in exterminating foot-and-mouth disease, or other possible diseases that are equally as important. This would depend to a great extent upon the equipment of the state. It is especially true in reference to the number of available men, their qualifications and experience. The outline of the work to be covered in foot-and-mouth disease, for example, is somewhat as follows:—

1. Locating the disease.
2. Placing quarantines on premises and territory.
3. Appraising livestock and other property.
4. Preparing burial trenches.
5. Slaughtering diseased herds.
6. Disinfecting premises.
7. Farm-to-farm inspections.
8. Issuing permits.
9. Releasing quarantines.
10. Auditing and paying the bills.

The federal and state forces should each have a main office, and an efficient and sufficient office force to handle the business promptly and accurately. If the disease is wide-spread, the infected territory should be divided into districts and a competent, experienced man, who is familiar with the territory and the people, placed in charge of each district. It is best perhaps for both the federal and state governments to have a representative in charge of each district. If so, these men must understand each other thoroughly and work in absolute harmony. If this cannot be done, each had better be given a separate territory or separate duties and then held responsible for his part of the work. Where the work is done together, each should have free access to the other's records at all times and the field work should be routed and planned together so that duplications will be avoided.

The districts should not be too large. The men in charge should be in daily touch with the working force and at the same time keep

the main office informed daily of the progress and new developments.

In reference to locating centers of infection, the main office should know where the suspicious shipments have been received and, by co-operating with the railroad officials, shippers, dealers, etc., this information can be obtained.

The general public should be informed through the public press, agricultural papers, fliers, posters, public meetings, etc., of the presence and location of the disease; the symptoms, nature and importance of the disease and the measures to be adopted to prevent and eradicate it. In most cases the owner will report suspicious symptoms, either to his local veterinarian or to the state or federal officers. This plan should be encouraged in every way possible. It has been very unusual for owners to hide or attempt to hide the disease and it is believed that if they can be assured of prompt and fair settlement, none would deliberately try to deceive the proper officials.

As soon as the disease is located, or where there is reasonable suspicion of its existence, and where susceptible animals have been exposed to the disease, a special quarantine should be placed at once. Local, federal and state agents should have authority to place such quarantines. If possible to do so, a guard should be placed over the premises. Curiosity on the part of stock-owners and others to see how the disease looks is often responsible for its spread. A quarantine alone is not enough to keep such people away. Necessity often demands that the people on quarantined premises must leave the place. This might be done safely if a guard were present to disinfect their shoes, fumigate their clothing, etc. By this plan it would also be possible for children on quarantined premises to continue their school work safely.

Special quarantines, or those on a district or section of country, should be handled by the main office. The method adopted by the federal bureau in classifying territory as free, restricted, exposed and closed was considered satisfactory, and should be followed as closely as possible by the state authorities. It is not practical in all cases for the state and federal quarantined area to be divided in the same way. A state may consider it safe to move animals within the federal quarantined area for certain purposes, when the federal government could not permit such a movement across a state line. The state authorities may not be satisfied to accept shipments from

out of the state when government regulations would permit them. The main office should look after details of this kind.

On the matter of appraisements, a representative each of the federal and state governments should work together. These men should be familiar with the breeds and prices of livestock, and be able to place a just valuation on animals and other property that is to be destroyed. In case the owner is unwilling to agree to the appraisement allowed, the Pennsylvania law provides for appointing sworn appraisers.

The slaughter method has been adopted as the best means for controlling the disease and the sooner it can be done the better. An experienced person should be selected to destroy the animals. If any safe way can be devised to slaughter exposed animals, and save the hides or the carcasses for food it should be done. It is seldom feasible to manage the destruction so as to accomplish this saving, for the reason that it is not safe to move exposed animals to slaughter houses; there are seldom any facilities for conducting the work on the farm and moreover there is but a limited market for the meat slaughtered on the farm.

As soon as the animals are disposed of, the premises should be promptly disinfected. This should be carefully and thoroughly done under the supervision of a man especially trained for this kind of work. Reinfections occurred in very few cases during the past outbreak, yet, much of the work was done in very cold weather under adverse conditions.

Farm-to-farm inspections may be done by either state or federal men. The diagnosis should be verified in all cases and the most experienced and reliable men provided to examine all doubtful cases. There is perhaps more danger of diagnosing other conditions as foot-and-mouth disease than there is of failing to recognize and include true cases. The diagnosis is not always easy. It is especially difficult in those cases that have partially recovered, and in many instances at the beginning or the ending of an outbreak.

Permits for holding sales, moving livestock, hides, fodder, manure, etc., intra-state should be handled by the state forces. In most cases the state men are more familiar with the territory, people and the state regulations than the federal men.

Permits should be issued without expense to the owner, and by none except those specially authorized to do so. The federal men have rendered valuable assistance in an advisory capacity in the

matter of issuing permits. All transportation companies, stock yard companies, shippers and newspapers should be promptly notified by the main office of any changes in the regulations.

Before starting with the actual work of eradication a thorough understanding should exist as to the payment of accounts; not only as to the share of expense each party should bear, but as to the actual payment of same.

When it is decided that payment of claims is to be divided in a certain manner (as for instance, each paying 50 per cent.) instead of paying the claim by two vouchers, each for the exact share decided upon, it might facilitate matters and give more general satisfaction if such claims were paid in full at one time, either the state or the federal Department making the payment and being reimbursed by the other for its share of the expense. If a full understanding of the division of the expense were entered into before such expenses are incurred, no dispute would arise by this method, and better work might result. However, legal difficulties arising out of the prohibition against the federal government making loans must be avoided.

During the past outbreaks claims for cattle, etc., were paid by two vouchers, one by the state and one by the federal Department of Agriculture. It frequently happened that live stock were mortgaged to an extent of over 50 per cent. The share of neither department was sufficient to defray this mortgage, and as a result much confusion and delay took place in the settlement of such claims, with a corresponding degree of hardship and dissatisfaction on the part of the owners.

Funds should also be made available for the prompt payment of temporary laborers, such as men employed in the digging of trenches, the labor incident to disinfection, etc. Such funds were not always available during the past outbreak. It is extremely difficult to get competent labor quickly, and at the proper rate when the payment of wages is a matter of doubtful promptness. The majority of this class of workers are dependent upon their daily wage for their daily bread, and however good their claims might be they are not in a position to wait. This might be handled by special temporary disbursing agents, who could be bonded and sent out with the field parties.

It is extremely important that definite plans be adopted for obtaining funds and for making prompt payment of all just claims

when it is necessary to destroy livestock and personal property for the public good. In certain states the limit of appraisement has justly been raised to full market value in cases of foot-and-mouth disease. Some states have neglected to set aside funds for meeting such appraisements, but have trusted to the generosity of future legislatures to appropriate the money. This plan is too uncertain and far removed to appeal to our practical breeders and livestock men. Many of them are unwilling, and cannot afford, to accept promises that are not bankable. Colorado has adopted a plan that seems reasonable and just. It is as follows:—

The governor has authority, in emergency cases under certain conditions, to issue certificates of indebtedness. These certificates are practically notes of the state carrying four per cent. interest, and, under the constitution, the legislature is required to make an appropriation to care for such certificates whenever it meets. Under the law passed last winter in Colorado, in case of an outbreak of foot-and-mouth disease, or any other highly contagious disease, the stock board informs the governor and he authorizes the board to destroy such livestock and property as may be necessary, after the appraisement, and upon certificate from the board as to the indebtedness of the state, the governor causes certificates of indebtedness to be issued. As these carry four per cent. interest and are certain to be cashed at the first session of the legislature, they are practically the same as cash and will be accepted by all banks the same as any other security.

Under this plan the credit of the state is used for any amount that may be necessary to stamp out any serious live stock contagion. The plan is simple and, it is believed, will be effective.

Co-operation of state and federal government officials must exist to the fullest extent if prompt and efficient work is to result. The system of dividing the matter of expense equally between the state and federal governments, which existed during the recent outbreak, seems to have been just and equitable, and one which gave general satisfaction to all concerned. The actual work should be done on a fifty-fifty basis also, if possible.

The subject assigned for this paper was "An Ideal State Law for Co-operation Between State and Federal Authorities in the Work of Eradicating Contagious Animal Diseases". The "ideal" is so difficult of attainment that some authorities define it as "visionary, or existing only in imagination". Therefore, while having

an ideal in mind, I prefer to confine my efforts on this subject to a comprehensive law which may be tangible, rather than to an ideal which is only visionary. This is a matter which has receivel our attention and efforts for a number of years and has resulted in the adoption by the Legislature of Pennsylvania of what is known as the Act of July 22, 1913.

The inception of the present law was the act of May 21st, 1895, which created a State Livestock Sanitary Board, and defined its duties. The original act has been amended from time to time and was finally codified into what has proved an efficient and comprehensive law, under which we have been enabled satisfactorily to handle several epizootics, as well as the ordinary run of transmissible diseases which are of daily occurrence. It has also given us power to impose restrictions upon the interstate movement of diseased and undesirable animals and enables us to secure assistance from the federal Bureau of Animal Industry by a section which definitely provides for co-operation with the authorities of the National Government (Section No. 34). Such assistance is not confined to interstate cases, but may be and has been, available for work within the state.

The federal employees are appointed agents of the State Livestock Sanitary Board and issued identification cards. They then have the same authority as regular state agents, but receive no compensation from the state. In this way the federal men have rendered to the state valuable assistance. The Board has never had occasion to regret that such authority was given, but has felt under deep obligations to the federal government for the valuable service it has rendered in exterminating two outbreaks of aphthous fever.

In the discussion of an efficient livestock sanitary law we must first consider the foundation upon which it is to rest. There should be provided a livestock board or bureau in the Department of Agriculture. Such body must be composed of men who shall be well versed in livestock diseases and not of so-called practical business men or practical farmers whose views will incline only toward minimizing the immediate financial losses occasioned by destruction of diseased animals. Under the direction of this body there must be an efficient corps of trained men whose services as sanitary police may be available at any time upon short notice. For this purpose it is not necessary to maintain a large standing force, but a small corps of regular employees may be used in an emergency as a nucleus

for the formation of a larger force to handle unusual conditions. Under ordinary conditions the regular employees may be profitably used in the work of meat and milk hygiene and in handling the usual run of dangerous diseases which are constantly encountered by owners of livestock. In order to be of greatest service the livestock authorities thus created must be provided with legal authority to enforce such requirements as may be deemed necessary.

Probably the most important requirements will be an efficient quarantine, which should be elastic as well as drastic. Such a quarantine could be made to cover all classes of animals, individually or collectively, and all materials which may convey contagion. It should also be made to apply to individual premises, as well as to all premises and territory within described boundaries. In addition to quarantine, a comprehensive law must provide for appraisement and destruction of animals and property, when such action shall become necessary in order to prevent the spread of disease. Provision should be made for equitable and prompt adjustment of all losses thus sustained.

In order that such a law shall have force it is necessary to provide penalties for infractions of the statute itself, of quarantines, and of rules and regulations adopted pursuant to the law.

In formulating the Pennsylvania law, these were the salient points around which were collected the auxiliary requirements necessary to place it on a workable basis.

While we do not presume to offer it as an "ideal", as we are aware of several minor points wherein it may be improved, we have found it to be sufficiently comprehensive to enable us satisfactorily to handle our sanitary work.

This law also empowers us to make rules and regulations for the enforcement thereof. Furthermore, it has been declared to be fair and just and has received the endorsement of the progressive and broad-minded livestock owners and breeders of our state.

The law should be broad in its terms; the powers conferred on the livestock board should be comprehensive; details should be omitted. Wide range of authority is essential if officials are to get efficient results, particularly in emergencies. An attempt to regulate minor matters in the statute itself is sure to lead to embarrassment and to hamper officials when they have to deel with unforeseen contingencies. No scheme which is elastic, and adaptable to all conditions, can be devised, unless it embraces power, lodged some-

where, to make changes and do unanticipated things, without the delay which would be unavoidable if an amendment of the law itself at the next session of the legislature were required before the board can move.

Vesting in the board power to make rules and regulations is the "ideal" provision for taking care of details. Such rules and regulations, of course, are not valid unless in harmony with the guiding principles prescribed by the statute.

The only serious inconvenience we have encountered in the operations of our law and regulations is the fact that in some respects they conflict with parallel laws and regulations of other states and those governing the federal Bureau of Animal Industry. These discrepancies are very confusing and embarrassing to transportation companies and shippers; also to livestock owners living near state borders. A railroad agent may receive rules and regulations from the federal authorities and half a dozen or more states, from which his road draws its livestock traffic. All of these regulations may differ on essential points and it will be impossible for the agent properly to construe the intentions of the various authorities. Nearly every regulation which may be drawn will be provided with exceptions to cover various classes of livestock and various exigencies which may arise, as in the case of livestock for immediate slaughter being differentiated from feeding or breeding stock and subject to an exception of the general provision of the regulations. That which is permissible under an exception to a regulation of one state may be prohibited by the regulation of an adjoining state which has not provided for such an exception.

In one instance a shipper obtained a permit in Ohio to move and ship a load of cattle. When the railroad agent refused to accept the consignment on the grounds that the Pennsylvania regulations prohibited the importation of such cattle, the shipper became incensed, threatened a law suit and to withhold his future patronage from that railroad. The shippers thought that by complying with the regulations of one state and obtaining an official permit, he was at liberty to carry out the intention of his permit.

In another instance a shipper obtained a permit from a federal agent in New York to ship a load of dairy cows into Pennsylvania. After viewing the federal permit the railroad agent received and forwarded the consignment. At that time the Pennsylvania regulations forbade the importation of dairy cattle and when the ani-

mals arrived at destination, were quarantined and held under observation for six weeks, which occasioned loss and inconvenience. It was natural for the shipper in this case to assume that the federal authorities had jurisdiction over interstate shipments. His assumption was correct in so far that the federal authorities could forbid the interstate shipment, but was wrong in assuming they could affirmatively authorize it in conflict with Pennsylvania regulations.

If these objections can be overcome by the adoption of uniform laws and regulations by all states, in conformity with similar laws and regulations of the National Government, we will make rapid progress in the work of livestock sanitary control. There does not appear to be any serious difficulty in the adoption of a uniform national and state law, but when we approach the subject of uniform regulations we will probably encounter numerous perplexities and controversies, owing to differences of sanitary problems in various sections of the country. This will be especially true in regard to interstate movements by common carriers.

It may be of interest to refer to a difficulty of this nature which arose in our state during March, 1915, at a time when the foot-and-mouth disease outbreak was under control, and restrictions were being gradually lessened. Under federal regulations it was permissible to ship livestock, for immediate slaughter, out of federal modified and exposed areas. The Pennsylvania regulations forbade such shipments to enter our state, and were even more drastic in forbiding such shipments to pass through the state enroute to other states.

A reference to the map will show the keystone position held by our state, as such shipments could not reach New York, New Jersey or the New England States except by passing through Pennsylvania or Canada and, of course, Canada was closed to livestock from the United States.

From certain experiences we felt justified in adopting and enforcing our own state regulation; so far as we are aware no other state adopted a parallel regulation. Hon. Francis Shunk Brown, Attorney General of Pennsylvania, declared that we had legal authority under the sanitary law, to adopt and enforce such a regulation. Hon. Martin G. Brumbaugh, Governor of Pennsylvania, upheld our action as being an advisable precautionary measure to prevent reintroduction of foot-and-mouth disease into the state. The regulation was also endorsed by various breeders' associations.

Of course, the railroad authorities vigorously opposed our action, but after a conference, at which our position was clearly and forcibly stated, the railroads withdrew their objections and took immediate steps to comply. As far as practicable such situations as the above, and all other problems which may arise, should be anticipated and uniform regulations be prepared for adoption by the various state and national authorities.

Such uniformity should cover so far as practicable the transmissible diseases of animals, the manufacture, sale and use of biological products and meat and milk hygiene. Municipalities and local boards of health should adopt the laws and regulations of the state and the state should follow the federal government.

Probably the best method for attaining the desired uniformity would be for the federal authorities to have supreme jurisdiction over livestock sanitary control work in each state, with the state organizations acting as auxiliaries and being in immediate charge of the field work. I realize that this proposition is somewhat visionary and approaches too closely to the "ideal", to be practical at this time. But I am convinced that a final solution of this problem of uniformity can, and probably will, be worked out along these lines, just as has been done in the case of the military forces of the various states.

The Pennsylvania law has stood the tests of the lower courts in a number of instances and its constitutionality has been upheld by the Superior Court. The opinion rendered by the learned Judge Orlady of the Superior Court will be gladly forwarded to anyone who may desire it.

LARGE AREA TICK-FREE. Areas amounting in the aggregate to 12,313 square miles, situated in the states of Alabama, Arkansas, Louisiana, Mississippi, North Carolina, and Virginia, was freed from the tick quarantine on December 1. Previous releases bring the total for the year's work to about 50,000 square miles—the greatest area released in any one year since systematic tick eradication was begun in 1906. At that time there were 741,515 square miles under quarantine; there are now 465,733 square miles, or less than two-thirds of the original area.

WHAT GENERAL AND WHAT SPECIFIC RULES SHOULD BE OBSERVED IN FIXING THE PERIODS AND DURATION OF THE DIFFERENT FORMS OF QUARANTINE AGAINST FOOT-AND-MOUTH DISEASE*

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The assembling of men for the purpose of discussing the subject of quarantine and its application to a particular disease is not new to sanitary science. The term itself refers to the old sanitary system of detention in the lazarets of ships and men for forty days for the purpose of fumigation. Quarantine dates back to 1348. Since that time, there have been many international conventions on the subject. Paris, Vienna, Constantinople and Rome have each entertained gatherings of this kind. However, it was in the conference at Venice in 1892; Dresden in 1893; Paris in 1894; and again at Venice in 1897 that the the controverted points were settled relative to the rights of communities to close their borders to any and all traffic that was liable to carry infection to other individuals or countries. There is, perhaps, no other topic in preventive medicine that has received more careful attention than this. The necessity of quarantine has been recognized and already statutory authority has been given to the proper officials by state and national legislative bodies to enforce it whenever it is deemed necessary in order to prevent the spread of a communicable disease. The principle, therefore, that such protection is a legal obligation is clearly established and the correlated question of authority to enforce it is granted throughout the civilized world.

The adjusting of a quarantine has been a matter of much controversy. From the beginning its purpose has been to protect men and animals against infectious diseases. While this appears to be simple, many perplexing questions have arisen relative to the requirements to be observed when the quarantine is laid either as a means of eradicating or as an aid in combating infection. The two most important are to determine the time necessary to enforce it and the restrictions required to insure its efficiency. For centuries the time was an arbitrary period fixed by the authorities. The rec-

*Read at a Conference called in Chicago, November 29-30, by Assistant Secretary of Agriculture for the discussion of foot-and-mouth disease.

ords show that the effect of such a definite time was satisfactory in many instances but there were numerous exceptions. In some instances these allowed new cases to arise which became centers for the further spread of the disease. However, such quarantines did much to hold the plagues in check. That was all that could be accomplished, for the nature of the disease was not understood.

In recent times, the development of definite knowledge concerning the cause of the diseases to be guarded against has shed new light upon the requirements of quarantine. After the etiology of the plagues was known; when the channels by which the virus escapes from the body were recognized; when the degree of resistance of the infecting agents to external influences was determined; and when the ability of the virus to find another host was understood, it was easy to explain that for the protection of a community a quarantine could not be raised arbitrarily but should be held until the individuals thus segregated are no longer capable of transmitting the virus. This changed the practice of holding a quarantine for an arbitrary period to one that fixed its duration in accordance with the time during which the infected individuals are dangerous. In addition to this, such restrictions were added as necessary to prevent the escape of the virus.

Those who reason in terms of mathematical precision may have difficulty in understanding that animals alike in all obvious respects, which become infected with a given virus, at the same time do not die or recover and eliminate the germs from their bodies in a like manner. The fact is they usually do not. Why this is so has not been entirely explained for the phenomenon is a struggle between two vital forces, the individual infected and the invading organisms. The resistance of the host is not known and the invading power of the organism is not determined. As the struggle comes to an end the animal body may entirely free itself of the virus or a few of the organisms may remain in some tissue or organ where they may multiply and from whence they may escape for a very long time to infect others. These are called "carriers" or spreaders and they present the most difficult problems in sanitary science. Again, in the process of healing, a diseased focus may remain somewhere in the body which may become surrounded with protecting tissue and the individual appear to be fully recovered. The virus in these areas may die or, after a time, grow through the retaining wall and either start up the disease anew or escape from the body to infect other individuals. There are many illustrations of this,

the most conspicuous, historically, being the cattle that carried contagious pleuro-pneumonia from Europe to South Africa and Australia months after recovery was thought to have been complete.

Successful quarantine must take into account many factors. Most of them come to us not as clearly defined tangible facts but rather in the form of biological forces which manifest themselves in the unfolding of the disease. They are the controlling elements although they can be understood only in so far as our knowledge of infectious diseases is able to accurately interpret them. However, the principles to be observed are clear. The quarantine is placed to prevent the spread of the virus. It must be maintained until there is no danger of the animals transmitting it either immediately or at any future time. It is difficult for those not trained in the habits of microscopic life to appreciate that viruses are vital forces that take no heed of the opinions of men. The fact cannot be too forcefully emphasized that naturally infectious diseases are spread in accordance with the means—simple or complicated—provided by the laws and forces of nature for that purpose. The agencies for the transmission of infectious diseases were not designed for the convenience of animal owners or sanitary officers but rather to enable the virus of the disease to perpetuate itself and to be transferred from the infected to the uninfected individual. We should not forget that the virus of foot-and-mouth disease, for example, is a definite factor in nature's economy and is provided for quite as much as the perpetuation of other living things. We look upon the transfer of pollen by the insect in the fertilization of clover as a wonderful provision of nature because clover is useful to man. The transfer of the virus of a plague from one host to another is often just as wonderful and always just as securely provided for, but, because its effect operates against human interests, there is a tendency to condemn and to pass judgment without knowledge.

The fixing of a quarantine period and defining its specifications are dependent upon the character of the disease and the nature of its etiology. There must be knowledge of the location of the virus within the host, of the time in the course of the disease it is eliminated and its ability to spread after escaping from the body in order to adequately safeguard against it. Again the purpose of the quarantine modifies both its duration and requirements. If it is to protect a community against the introduction of a foreign disease it is obviously more drastic than if it is used only as a temporary means of combating the malady. When employed for

permanent protection it should remain for the maximum period of incubation and for the longest known time required for the lighting up anew of arrested lesions. In case of certain diseases the virus, after it escapes from the body, is able by numerous and insidious ways to disseminate itself to such an extent that it is difficult or impossible to confine it to the quarantined area. These are all important considerations in determining just what procedure shall be followed. In any case a margin of safety must be allowed.*

In order to apply the principles underlying quarantine to foot-and-mouth disease it is necessary to have the knowledge obtained from clearly defined answers to the following questions, namely:

1. What is the nature of the virus?
2. What is the period of incubation?
3. How does the virus escape from the body and by what agencies is it carried from the infected to the susceptible animals?
4. How long after apparent recovery are the animals capable of transmitting the virus?
5. Is it possible by practicable quarantine methods to prevent the virus from spreading after it leaves the body?

Because of the extreme infectiousness of this disease it has not been studied experimentally in this country. The work with it has been regulatory and for the purpose of diagnosis. The character of the virus has not been determined other than to learn that it will pass through bacterial proof filters and that it escapes from the open lesions of the affected animal. The period of incubation varies within undetermined limits. Exposed animals, as a rule, develop symptoms in from three to seven days but in occasional cases it is much longer. In New York it was found that now and then two and three weeks elapsed before symptoms appeared. After the virus escapes from the lesions it is carried on any article with which it comes in contact—the clothing or hands of attendants, on food, litter, implements, domesticated animals or insects.

The troublesome cases are those that carry the virus after healing. There are reports that animals have infected others months after apparent recovery. These are exceptions but they

*Rabies affords a good illustration of this. The average period of incubation of rabies in dogs in less than 40 days but by enforcing a quarantine of six months on all dogs going to Australia the disease has been kept out of that country.

affirm the possibility of such individuals spreading the disease for this period and we do not know for how much longer. Unfortunately we have no means of determining in advance how long an infected animal may harbor the virus. Zschokke investigated its ability to remain in the feet. "He found the vesicles which occur in the skin of the interdigital spaces and the plantar cushion may also extend under the horny capsule forming there, furrow-like spaces along the sensitive laminae of the wall and sole. He also found hidden vesicles in the hoof which did not open to the outside. The virus would remain there until it was brought to the surface by the natural wearing away of the hoof." There is nothing to prevent animals thus affected from eliminating the virus for an indefinite time. Loeffler, after careful investigation, recommended that no animal that had recovered from foot-and-mouth disease should be permitted in the channels of commerce.

A factor of still greater significance is the ability of the virus to escape by insidious ways and to be carried from the infected to well animals notwithstanding the barriers of quarantine. It is so difficult because of the many possible carriers, that Dammann stated it could not be prevented. He did not mean that infected cattle could not be isolated long enough,in insect proof enclosures with efficient guards, but that it was impossible by the usual or even more than ordinary rigid enforcement of quarantine regulations to prevent the virus from escaping and infecting other animals. His conclusion is confirmed by the best live stock sanitarians of Europe. It is the verdict rendered after long experience and observation by men who have endeavored to eradicate foot-and-mouth disease by quarantine and police control. In passing judgment upon this phase of the subject we must not be controlled by the experience with a few herds or even outbreaks. Data from many infected districts and numerous epizoötics are required, for by the laws of chance, fortunate results may, in a few cases, follow any procedure. In this country, where experience with this disease is very limited, we are not in position to judge unless we supplement our knowledge with the results of those whose experience is sufficient to indicate the shortcomings and value of quarantine. We are dealing not with a local question but a nation wide problem. Because of this greater responsibility our quarantine regulations should be safe, reliable and sound.

I have dwelt somewhat at length on the principles underlying

the determination of the important factors in quarantine for the purpose of pointing out the many elements involved in safeguarding our live stock interests by this method. Until more data are available the best we can do is to live up to the knowledge we possess unswerved by individual experiences to the contrary. When Captain Ross went to India to study the mosquito as a carrier of malaria he was often almost persuaded that the accused insect was innocent. He laboriously studied, one after another, 999 specimens in vain but the thousandth one revealed the story of the anopheles as the intermediate host and spreader of the malaria plasmodium. There is a common tendency to yield to the findings in a limited number of cases. There are people willing to formulate regulatory measures suggested by a personal experience. While such experiences have their value and while they may represent the majority it is well to remember that although it is the usual that ordinarily happens, it is the unusual that most often causes the trouble.

As I understand it, the questions involved are the object of the quarantine and the enforcement of its requirements.

There are two clearly defined purposes for which quarantine has been employed in connection with foot-and-mouth disease, namely, first to control it, and secondly to temporarily check its spread until drastic measures can eliminate the diseased animals and render safe the premises occupied by them. There is no other disease that ever gained entrance to this country so difficult to restrain by quarantine as this, due not only to its high degree of infectiousness but also because practically all species of animals are susceptible. Again, the undetermined limit of time that recovered animals may be carriers cannot be dismissed without careful consideration. Both Hess and Loeffler* found that a limited number of recovered animals carried the virus for seven months. Never-

*Loeffler's conclusions relative to virus carriers are as follows:—

"Regular supervision of such farms is indispensably required.

"One of the most important results of the researches concerning foot-and-mouth disease is, that the fact has been doubtlessly ascertained that, just as in numerous human infectious diseases, some of the recovered animals will remain carriers and continue the spreading of the virus.

"It seems that the number of such animals is limited.

"How long such animals can spread the virus, has not yet been ascertained. According to present experiences, even 7 months after the end of the epizootic, new infections have been caused by them.

"As yet no method is known to distinguish the virus spreaders.

"Infected animals are to be placed under observation for at least 7 months. They must not be offered for sale, and should be kept separated from healthy animals."

mann in his last annual report of the Veterinary Officers of Prussia pointed to more than one hundred outbreaks of foot-and-mouth disease attributed to virus carriers. The experience in practically all European countries points to the failure of quarantine as a means of eradication. The outbreak in Germany in 1892 which cost that country $25,000,000 and again in 1911 with a still heavier loss speak with emphasis on the weakness of this method. When such veterans in sanitary science as Dammann state that it is impossible to enforce a sufficiently strict quarantine to hold the virus of this disease in check, it seems presumptuous for us to consider it otherwise. When men like Loeffler and Hess find animals seven months after recovery capable of spreading the virus we have no experience in this country, and there is none in any other, to deny the possible danger of allowing recovered animals to go at large within that time.

From the present knowledge of foot-and-mouth disease and the available data concerning methods for its control two kinds of quarantine seem to be necessary—namely, federal and local.

The federal quarantine is imperative for all animals coming from countries in which foot-and-mouth disease exists. It should be rigidly enforced and maintained so long as there is a possibility of the animals transmitting the virus. In addition to this, strict supervision of all imported articles or substances that might bring the virus is essential. The outbreaks of 1902 and 1908 illustrate in a striking manner the necessity for such care.

The local quarantines need not be considered at length. They are, however, of the greatest importance in checking the spread of the disease. The Secretary of Agriculture has formulated regulations for this purpose and issued them as B. A. I. Order No. 231.*

*"(a) Quarantined area: Any State or any portion thereof quarantined for foot-and-mouth disease in live stock.

(b) Closed area: Those portions of the quarantined area from and to which the interstate and foreign movement of cattle, sheep, other ruminants, and swine is absolutely prohibited, and the movement of the dressed carcasses of such animals, the hides, wool, hair, horns, or hoofs of such animals, and of hay, straw, or similar fodder, manure, or litter is restricted.

(c) Exposed area: Those portions of the quarantined area from which the interstate and foreign movement of cattle, sheep, other ruminants, and swine is permitted for immediate slaughter after inspection and certification, and into which such animals may be removed for any purpose, also from which the interstate and foreign movement of the dressed carcasses of such animals, the hides, skins, wool, hair, horns, and hoofs of such animals, and of hay, straw, or similar fodder, manure, or litter is restricted.

(d) Modified area: Those portions of the quarantined area from which

This order leaves little to be added unless from experience changes or additions seem to be necessary. It provides for rigid quarantine of the affected premises and the country immediately surrounding them, and, under proper veterinary supervision, it permits the limited movement of animals in the next adjacent zones. This plan in itself is excellent. There is, however, need for a better mechanism for promptly enforcing it in the different states. Many of them are not organized in such a way that immediate action is assured. The delay of a single day may cause heavy additional losses. To guard against this there must be a closer sanitary supervision. We should find, if possible, the best method of bringing this about. I suggested district veterinarians under the state veterinarian whom animal owners and practitioners could call at once and who should have authority to enforce quarantine measures and to aid in making the diagnosis in cases of doubt. They would serve as sanitary supervisors and their territory should be no larger than they can properly cover. An expert district veterinarian would give both technical assistance to practitioners and have authority to enforce, whenever necessary, regulatory restrictions. The enormous value of our live stock warrants the necessary expenditures for efficient protection.

Whatever system of quarantine is finally adopted, the federal and state governments should recognize their obligation to the animal industries of the country. They should be prepared to meet emergencies. In the eradication of an epizoötic there must be co-operation. In plagues like foot-and-mouth disease where control necessitates the destruction of the entire herd, often of valuable animals, it would seem wise for our legislative bodies to consider adequate indemnity for the unfortunate owners. With proper precautionary measures such epizoötics should be very rare. But if, perchance, they do appear and herds have to be destroyed, would it not be wiser and eventually cheaper to have indemnities sufficient to encourage co-operation rather than those that provoke opposition?

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the interstate and foreign movement of cattle, sheep, other ruminants, and swine is permitted for immediate claughter without inspection, and into which such animals may be moved for any purpose, also from which the interstate and foreign movement of the dressed carcasses of such animals, the hides, skins, wool, hair, and hoofs of such animals, and of hay, straw, or similar fodder, manure, or litter is permitted without any restrictions whatever.

(e) Free area: Those States or portions thereof which are not quarantined for foot-and-mouth disease, and on which no restrictions whatever are imposed."

Eradication is for the good of the public and those who are benefited might bear a part of the burden placed upon the owners of the condemned animals. A campaign of education should precede or accompany regulatory work. The people should learn that the slaughter of infected and exposed animals alike is not the motion of any individual but the method arrived at by the crucial test of research and experience. To be fully prepared each state as well as the federal government should have a definitely formulated plan of attack that could be applied immediately should foot-and-mouth disease or any other animal plague appear.

Finally the conclusion seems to be justified that when the disease appears in a country generally free from its infection like the United States, quarantine should be enforced for protection against all importations that may bring the virus. Local quarantine should be employed only as a means for temporarily combating the disease. Its eradication is to be accomplished by the heroic measures of slaughter and disinfection. This conclusion is reached in full recognition of what has been accomplished with quarantine in isolated instances and in certain infected countries like the Philippine Islands. The slogan should be "we cannot afford to have foot-and-mouth disease in this country."

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CELL INCLUSIONS IN HOG CHOLERA

L. R. HIMMELBERGER, Laboratory of Animal Pathology,
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In 1907, Halberstalder and Prowazek[1] found in the conjunctival epithelium of persons suffering from trachoma, inclusions of the cell outside of and next to the nucleus. The bodies are seen near the nucleus as irregular masses and they become larger and finally break up into granules. Prowazek held these inclusions to be the result of the reaction of the cell to the virus. Since this announcement many observers have reported on finding these bodies in trachoma. Some have ascribed to them the position of being the etiological factor. It appears to at least have been established that these cell inclusions are characteristic of trachoma. Cell inclusions received their first claim to importance through the work of

Negri, who found them to be of eminent diagnostic value in lyssa. Bodies within the cell have been observed in many diseases caused by the filterable viruses. The Benda bodies in epithelioma contagiosum, the Lentz canine distemper bodies and the Shiffmann bodies in fowl plague are all claimed by their observers to be of significance. Uhlenhuth,[2] in a general study of hog cholera, reports on the observations of trachoma-like bodies in that disease. These inclusions according to Uhlenhuth differ from the trachoma bodies in being slightly larger. They were found on the average in eight to ten days after the injection of the virus, sometimes in both eyes, sometimes in one and at times in the upper or lower lid only. In most of the hogs they soon disappeared. In a few cases, however, they persisted until death. In several cases the bodies were found four to five days after the injection of the virus. These bodies have also been observed in hog cholera by Meyer[3] in an examination of a limited number of hogs suffering from this disease.

Cell inclusion from conjunctiva of cholera hog. (Plate was retouched).

The writer has systematically examined smears from the conjunctival epithelium of a number of hogs and has observed cell inclusions under various circumstances. We have never found the inclusions in the epithelial cells after death. All cells do not contain them even in a positive case. In fact the bodies are found in but a small percentage of the cells in a given microscopical field. The inclusions are found outside the nucleus in the cell protoplasm and vary in size from one-fourth to one-half the size of the nucleus. The protoplasm of those cells containing inclusions is more granular than the negative cells and presents granules staining more deeply and of the same staining qualities as the cell inclusion. The bodies observed by the writer were distinct and of regular structure, in that they were sharply circumscribed. Staining with Giemsa's solution, the nucleus is stained a deep blue, the cell protoplasm a pale blue and the inclusion body a purplish hue. The protoplasmic

granules are stained much the same as the inclusion and appear to be distributed in the immediate vicinity of the included body. In those cells containing the larger bodies the nucleus is compressed and distorted.

These bodies were found in ninety-five per cent of the cases examined during the period at which the body temperature was beginning to rise; in other words in the first stages of the disease. In only a small percentage of the cases were cell inclusions observed at the time the temperature was at its maximum, 106° to 108° F. Examination of the sections taken at time of death failed to show the presence of cell inclusions. Only a few cases have been examined in section however. Smears made from the conjunctiva of hogs after death failed to show the presence of inclusions when examined.

There is a great difference of opinion regarding the significance of these bodies, in rabies, trachoma and other diseases in which they have been observed. Whether they may be considered as the actual pathogenic organism, some stage of its life cycle or whether they are mere reaction products of the cell against the virus, is a question difficult to settle. In order to throw some light on these questions, Uhlenhuth produced mechanical inflammation of the conjunctiva in a number of hogs. After the inflammation had set in, smears were made and examined but no inclusions were found. Eye secretions from cholera hogs transferred to the conjunctiva of other animals, the ape, dog, cat, etc., failed to transfer the bodies. In the examination of one hundred and thirty hogs, only four or five per cent. showed the presence of the inclusions. Attempts to transfer these bodies to the conjunctiva of other normal hogs failed.

In a study of the Negri bodies, Watson[4] is lead to believe that they are definite protozoan parasites, placing them in the sub-order of Cryptocysts or Microsporidia of the Sporozoa. Spore stages were observed by Watson and if any analogy exists between the Negri bodies and rabies and the cell inclusions of other diseases, there may be some grounds for consideration of them as a stage of the life cycle of the etiological factor.

Wolbach, however, classes the trachoma bodies as non-parasitic, and as evidence of this he cites studies of sections which showed inclusions in only the thinned or superficial epithelium, while, were they parasitic, the deeper layers of the stratified epithelium should show the effects of the invasion. He concludes that trachoma bodies

are present in only injured epithelium and that granules of like appearance can be demonstrated as the result of disturbed mucous secretion. As regards the included bodies in hog cholera we have no evidence of their parasitic relationship to the disease. Uhlenhuth calls attention to the very high virulency of secretions from the eyes of pigs sick with hog cholera. The injection of this material in the amount that a capillary tube one centimeter long would hold, produced the disease in as short a time and in as severe a form as large amounts of virulent blood. While the high virulency of eye secretions suggests the possible involvment of the secretory cells of the conjunctiva, it would not be safe to consider these bodies of etiological significance in hog cholera. Noguchi has recently announced the successful cultivation of trachoma bodies *in vitro*, which should open the way for determining the relationship of cell inclusions in general to disease processes.

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HASSTILESIA TRICOLOR (STILES and HASSALL, 1894), A COMMON PARASITE OF RABBITS IN THE UNITED STATES

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In Europe the hares and rabbits are animals of some little importance as food animals. Meat inspection regulations contain provisions covering the conditions under which these animals may be passed for food or condemned; poaching among the rabbit warrens of private game preserves is a specific offense which carries at times rather severe penalties; and European veterinary papers not infrequently publish articles dealing with the diseases and parasites of rabbits. In the United States the status of the wild rabbit varies from that of game in the eastern United States to a pest in many

parts of the West, but whether we regard it as game to be preserved or a pest to be eradicated the parasites which affect it deserve a certain amount of attention.

In a paper now in press the writer has listed sixteen species of nematode parasites from hares and rabbits; a casual examination of readily available papers indicates that at least fifteen species of cestodes occur in hares and rabbits either as strobilate tapeworms or as bladderworms; while the following flukes, *Fasciola hepatica* (the common sheep liver fluke), *Dicrocoelium dendriticum* (a rather common fluke in sheep and cattle in Europe), and *Distoma tricolor,* and possibly others which have not come to my attention, have been reported from hares and rabbits. It is with the last named fluke that this paper deals.

Distoma tricolor, described from *Sylvilagus mallurus (Lepus sylvaticus)* and *Lepus americanus* by Stiles and Hassall in 1894, is of very common occurrence in the intestines of rabbits in Maryland, Virginia and the District of Columbia, being present in large numbers in every rabbit examined some years, though there are years when it is of apparently rather rare occurrence. Dr. Hassall tells me that it has also been found in heavy infestations, suspected of killing the rabbits, on Long Island, N. Y., by Dr. Austin Peters. Dr. Francis of the Texas Experiment Station tells me that this fluke is very common in jack rabbits around College Station, Texas. It is evident that a parasite which occurs from New York to Texas is of wide distribution and probably rather common. That it is not found or reported oftener is probably due to the fact that the fluke is about one millimeter long and looks something like a small seed to the naked eye.

The wide distribution and common occurrence of this fluke in American rabbits makes it desirable that it be referred to some genus other than the collective genus *Distoma.* It does not conform to the generic diagnosis of any existing fluke genus known to the writer and it seems necessary to establish for it not only a new genus, but a new family. I have accordingly created a new genus named after Stiles and Hassall, to whose collaboration veterinarians, physicians and zoologists are indebted for the immensely valuable author catalogues and host catalogues of the Bureau of Animal Industry and the Public Health Service. The status of the fluke is then as follows:

Superfamily Fascioloidea Stiles and Goldberger, 1910.

Superfamily diagnosis.—Trematoda: Flukes with organs of attachment consisting of an oral sucker and a ventral sucker which is situated not far from the oral sucker. Reproductive organs usually posterior of the ventral sucker. Body not subdivided. Hermaphroditic, with the exception of the Schistosomidae.

Type family.—Fasciolidae. Railliet, 1895.

Family Hasstilesiidae Hall, 1916, new family.

Family diagnosis.—Fascioloidae: Small, compact flukes of relatively great width. Genital aperture posterior of acetabulum, midway between this and the posterior end of the body. Two large testes, the posterior located in the median line, the anterior entirely to the left of the median line. The ovary is entirely to the right of the median line, lateral of both testes and either extends slightly anterior of the posterior testis or else overlaps the anterior border of the posterior testis and the posterior border of the anterior testis. Esophagus short; intestinal ceca extend to the posterior border of the body and are rather tortuous. Ovary is dorsal of the right intestinal cecum in the specimens I have examined: Stiles and Hassall state that it is ventral. Left testis is ventral of the left intestinal cecum.

Type genus.—Hasstilesia Hall, 1916.

Subfamily Hasstilesiinae Hall, 1916, new subfamily.

Subfamily diagnosis.—Hasstilesiidae: Characters of the family.

Type genus.—Hasstilesia Hall, 1916.

Genus Hasstilesia Hall, 1916, new genus.

Generic diagnosis.—Hesstilesiinae: Acetabulum slightly smaller than the oral sucker. Posterior testis in posterior third of body, anterior testis in middle third body. Genital aperture near the anterior border of the posterior testis. Cirrus pouch well developed. Vitellarium in middle third or anterior two-thirds of body; transverse vitelline ducts pass near the anterior border of the posterior testis. Laurer's canal present. Uterus extends from the so-called shell gland on the right side anteriorly around the acetabulum, descending over the left or anterior testis or between the testes, then back from the left side between the testes, the metraterm terminating to the left of the cirrus pouch at the genital pore. Ova ellipitical. Excretory system not well developed, excretory pore terminal, the very small contractile end portion giving off two fine canals.

Type species.—Hasstilesia tricolor (Stiles and Hassall, 1894) Hall, 1916.

Species *Hasstilesia tricolor* (Stiles and Hassall, 1894) Hall,1916.

Specific diagnosis.—Hasstilesia: .65 to 1.2 mm. long by .35 to .64 mm. wide by .32 mm. thick. Body elliptical, showing three colors in fresh material, the uterine portion yellow to brown, the vitellaria white, the rest of the body gray. The anterior five-sixths (not two-thirds, as Stiles and Hassall state) of the body covered with minute instable spines. Oral sucker 88 to 112 microns in diameter. Acetabulum about one-fourth of the body length from anterior end. Intestinal ceca much looped dorso-ventrally and extending inward toward the median line just posterior of the acetabulum. Laurer's canal opens dorsally about half way between the acetabulum and the genital pore. Pharyngeal bulb about 40 microns in diameter. Esophagus about 30 to 40 microns long. Testes 160 to 272 microns in diameter. Vas deferens and penis well developed. Ovary 80 to 120 microns in diameter. Ova 13 microns by 20 microns.

Hosts.—Lepus americanus, Sylvilagus floridanus mallurus ("Lepus sylvaticus").

Location.—Intestine.

Distribution.—District of Columbia, Maryland, Virginia, New York, Texas.

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SALMON MEMORIAL ADDRESS*

W. HORACE HOSKINS, Philadelphia.

I well remember, in the latter seventies, when our country was seriously turning its attention to the consideration of animal diseases and how it was confronted with the possibility of having contagious pleuro-pneumonia of cattle becoming a nation-wide scourge. I vividly recall the great conference at Chicago when it was found that it had reached Illinois and the possibilities of its

*Presented at the meeting of the Philadelphia Branch B. A. I. Employees.

extension to the great grazing plains of the unfenced territories of the West. The Treasury Cattle Commission was then the body charged with the responsibility of dealing with this animal plague. Conspicuous then among those who were gravely considering the problems of elimination was one whose name has since been enscrolled on the nation's walls of fame as a great public servant.

A Commissioner of Agriculture followed the Treasury Cattle Commission and this official likewise recognized the intelligent and broad gauged services of this splendid representative of his profession and assigned him to several important posts of service—investigating diseases that were causing great losses to animal industry in various sections of our land.

When in 1884 the Bureau of Animal Industry was created by an Act of Congress, the position of Chief of that Bureau was given to this man and for twenty-five year no one ever filled an official role in the public service with greater fidelity, more intense zeal and distinguished achievements than this representative of his calling.

Some of you will remember that the cardinal act establishing this Bureau restricted the number of employees not to exceed twenty. When I realize that today it utilizes the services of nearly twelve hundred members of my and some of your profession in a quarter of a century's growth, I may be permitted to repeat here what I once stated on the floor of the Convention of the American Veterinary Medical Association that I knew of no man in my profession who under the trying vicissitudes of our politically governed country could have so well and faithfully filled this position as the now lamented Dr. D. E. Salmon.

Blessed with a well-balanced mind; fitted by a training in the best school of our land preparatory and professionally; signally endowed with a kindly disposition and warm-hartedness, keen of preception in selecting men for places they were well adapted to and of developing men for special fields of service as the needs arose, ever eager to conserve the highest and truest interests of his fellow man, to which end he bent every energy and force within him, never for a moment forgetting or overlooking the economic side of the varied problems confronting him in this great work; that our land might prosper and foster animal industry as one of its truest sources of real wealth; he labored on in the upbuilding of his department and gave of the best part of a good man's life—a service

rich in results—true in its aims and purposes and fruitful of untold and unmeasured blessings to the prattling baby at the mother's feet to the the blossoming childhood; the blooming manhood and womanhood and the conserving of old age that comfort, peace and strength would be theirs even unto the end through a wholesome food supply.

Your positions, this association, your lives of useful helpful service to mankind and the uplift of your and my wonderful galaxy of states, is the outgrowth of the work so faithfully planted, so well watered and nurtured, so devotedly fostered and promoted by the lifetime of public service rendered by this man to whom I pay this loving tribute.

It was my great privilege and it was a precious one indeed, to have mingled thirty-five years of my own life in the veterinary profession with him as a co-laborer in the upbuilding of our calling that it might conserve man's needs and a country's growth with a fidelity to its highest purposes and I count it a rich treasure indeed that I enjoyed in this period his sincere friendship.

A politically governed country has the richest of charms and allurements and its pathway is likewise strewn with sore trials and bitter disappointments. Ingratitude is the basest experience of an official career. It was this good man's lot to taste of the bitterness of a nation's ruler's ingratitude. Time cannot efface nor memory obliterate the cruel, unjust and ungrateful treatment meted out to this great public servant, but a loving profession, a nation's benefactor can keep fresh the memory of those rich deeds, faithful trust he preserved and public services rendered and a nation's children's children may continue to rise up and call his name blessed.

Let us unite our efforts to fittingly perpetuate the good name of our co-worker and co-laborer. With loving devotion let us enshrine his memory in the annals of America of a life well lived, a work well done and through the perpetuation of the story of his public services, hold forth to future generations the richest reward of duties well performed, an honored and revered name among those who knew him best.

May I invite you all without regard to place or station, to contribute the most you can possibly give to the richest memorial that may grace a well lived career, not in gold or silver that may tarnish, not in marble or stone that may crumble and decay, not in canvas that time may obliterate, but in a living working fund that shall

aid the deserving student to an education in some aspect of your and my work, that shall establish a fellowship for advanced study in your and my field of service that our labors may be easier and lighter or an honorarium to some well deserving worker who has contributed some worthy addition to our knowledge and lessened our toil and responsibility.

In keeping with his modest, unassuming career, his lifetime of search for greater and truer knowledge, his restraint of boastful proclamation of great things achieved, his deep consciousness, at all times, of the greater problems to be solved, let us rear such a memorial as would have met his approval in life and make future generations more conscious of his devoted public services.

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REPORTS OF CASES

DEPIGMENTATION OF HAIR AND SKIN WITH RETURN TO ORIGINAL COLOR

I. O. DENMAN, Middletown, N. Y.

While at Walton, N. Y., I saw an unusual case which was very interesting to me as I have never seen a similar case and have been unable to find an account of one in the literature. The case was a bay gelding 7 years old, weighing about 1400 lbs. used by the Risley Lumber Co. of Rock Rift, N. Y. for hauling wood. This horse had a large cold abscess of the shoulder and was treated in my hospital, the abscess walls being sloughed out with copper sulphate, resulting in a complete recovery. About two months later my attention was called to the case as the foreman said the horse was getting speckled. This was indeed true as small areas of depigmentation were appearing over the entire body. These gradually increased in size until after 2 or 3 months the horse was covered with round white spots of hair and skin varying in size from that of a dime to that of a half dollar. There was not at any time the slightest trace of any inflammation, eruptions, or lesions of any kind on the skin. About this time the horse developed a slight case of heaves and daily doses of Fowler's solution and linseed oil were prescribed. Soon after beginning this treatment it was noted that

the white spots were no longer increasing in size and later a decrease in size was noted until after 4 months they had entirely disappeared leaving the original color of a solid bay.

To me the above case presents an interesting study. What is the cause of the depigmentation and why did it appear in areas? Was the copper sulphate a causative factor and did the administration of arsenic bring about the return of the pigment?

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ANTITETANIC SERUM AND MAGNESIUM SULPHATE IN TREATING TETANUS

HENRY THEOBALD, Roselle, Ill.

During a period of 8 months I had occasion to treat 5 cases of tetanus with what I consider fair success.

CASE No. 1. In May, 1914 I was called to a case which the owner mistook for a case of founder but on my arrival found a typical case of tetanus.

It was a 12 year old gelding which when being unhitched from the wagon, had run away into an old wind-mill that had been torn down, thereby tearing a gash of 8–10 inches above the left knee, leaving an ugly lacerated wound. The owner said that he had washed the wound after it happened, but outside of the cleansing no more attention was paid to it until he called me.

When I examined the horse I found him all stiffened, with practically all muscles rigid. The membrana nictitans was very much in evidence; the tail curved to one side; the muscles of the neck as hard as a board and in fact unable to move due to general stiffness.

Locomotion was so impaired that it was dangerous to be near him for fear he would fall over, as every such attempt showed plainly that when he moved, it was with the utmost effort that he sustained balance.

The jaws were set but could be opened ⅛ of an inch with some force.

The wound was grown over with an abundance of proud flesh, the knee swollen and very painful.

In standing he appeared as if straddling some object; at no time having the legs in a normal position, for about two weeks.

In the process of treatment I curetted the wound and gave it a cleaning with a strong solution of tr. of iodine and carbolic acid.

After curetting a long retaining cavity was thereby established, which I packed with absorbent cotton saturated with equal parts of tr. of iodine and carbolic acid, and left in the wound until the following day. Then I proceeded to give 1500 units of antitetanic serum (P. D. & Co.) and 40 c.c. of concentrated solution of magnesium sulphate, 20 c.c. behind each shoulder.

The necessary steps were taken to clean the parts where injections were made, as clipping the hair and washing and painting with iodine. (I mention this as abscesses formed which can not very likely be traced to infection with the needle.)

As the patient was unable to eat I advised the owner to keep a pail of water within reach, and also proceeded to give a bran mash which was made of a rather sloppy consistency, figuring that he might be able to get a little nourishment and also to help as a laxative.

The stall was darkened, not admitting any light, and being in a remote end of the barn, far enough away from all noise, I figured that the patient might have a chance.

The second day I noticed hardly any change, only that the patient had partaken very sparingly, and with much effort of the bran mash and drank about ¼ pail of water.

The treatment of serum and mag. sulph. was repeated as on the first day, and every succeeding day until 12 doses of the serum had been given, but the mag. sulph. sol. was continued for 15 days in all, three days longer than the serum.

Daily attention was given to the wound such as curetting and strong antiseptic cleansing and packing.

Did not notice much change until the 4th day when to my surprise the muscles of the jaw seemed to relax.

Ordered the owner to secure some alfalfa which was in season and nearby, and handed the animal a small handful which he grasped firmly with his lips and held there until he was able to work it between his teeth.

After he worked it into his mouth he was unable to masticate it, but kept on munching and smacking for a long time before he swallowed it without having set his teeth on it. The patient from this day on kept on improving very nicely; on the 6th day he ate and masticated the alfalfa, although with effort and there were hopes

of his recovery. On about the 10th day a number of abscesses formed at the point of the injection of the mag. sulph. sol. which were promptly opened and cleansed.

(Abscesses kept on forming from later injections of mag. sulph. and in every other patient treated the same way.)

From this time on the patient did finely and after the serum for 12 days, the mag. sulph. was continued for 3 more days. All this time the patient kept on eating continuously having a ravenous appetite (i. e. after 10 days) was able to move around the stall which he seldom did, devoting most of his time to eating bran mashes and alfalfa all day long.

Plenty of fresh water was given, the same being given every 2 hours to be sure that he should not have to drink any that was warm, or full of dust or feed. An iron tonic was now given for 2 weeks in the form of a powder on the feed.

Whenever the animal showed great distress during the first 10 days potassium bromide was given in ½ doses 4–5 times daily.

The heart, whenever it was deemed necessary, was stimulated with camphor and aromatic spts. of ammonia but no medicine was given when the patient was quiet and the heart action good.

The animal quite often showed distress after eating which was overcome with the bromide.

About a week after dismissing the case the owner called again and I then found that some of the abscesses had healed with some infection left in them which caused considerable swelling. I opened them and ordered the patient turned in pasture where he was kept for 2 months. He was put back to work and performed as well as ever.

CASE No. 2. I was called to a case the following June which had developed tetanus but could not find a wound of any kind. This was a yearling colt but for his size looked like a 2 year old full of life, though stiff when the owner brought him from the stable.

This one was able to walk with a straddling gait but when about 20 feet from the barn made a leap or attempted to leap like colts of that age are wont to do, with the result that when he struck the ground, he bounded like a rubber ball for about 100 feet on all four until he fell, almost falling on top of the owner.

He was made to rise in which we assisted, but was a nervous wreck when we got him into the box-stall away from the noise. The jaws were not set in this patient but there was considerable diffi-

culty in mastication the first 3 days, i. e. whenever I gave him something to eat on my visits.

I gave the owner the usual instructions pertaining to cold water, grass and bran mashes but on my daily visits for seven days the owner had paid very little attention to him, as it was haying season and he was too busy to bother with him. The serum and mag. sulph. were given in the same doses as case No. 1 and after a week the patient was turned into pasture, a little stiff but made a nice recovery. With this case I was at a loss to understand what cured the patient; my treatment or the want of water and feed as I am positive that he did not get enough from the owner in a week to make one meal. Anyhow I took the credit.

CASE No. 3. This was in August, 1914 at the same place where I had Case No. 1. It was a 5 year old geldng that the owner valued very highly.

The case was fully as bad as No. 1 if not worse; he was treated the same way with a nice recovery. The owner did nobly in performing his work supplying alfalfa, bran mashes and water as per orders.

It took about 4 days before the muscles of the jaw relaxed and as they were locked rather tightly, I was surprised to find him improving from then on although not as speedily as No. 1. On the 7th day the owner called me late at night and said he was afraid the horse would die. I rode out and found him panting and sweating profusely, with a fever of 106°.

I could not account for the condition except that some of the abscesses might have caused it, as the lungs were normal and no other symptoms of other trouble. I gave him 1 oz. of quinine sulph. sol. and used a rectal injection a little colder than luke-warm water (a pail full). This was about 10 o'clock at night and then left my pump with orders to again give an injection at 12 o'clock and again at 4 o'clock.

The next morning about 10 o'clock there was no sign of fever and the patient was doing well.

Both front legs of this patient were swollen twice their normal size due to the injection of mag. sulph. and remained so about 2 weeks after the last injection. I found swelling following in every case which seemed to gravitate in some patients to the fetlock joint but it gradually receded after 2 weeks from the final injection. After about 3 weeks this horse was turned to pasture, given a brief

rest and put back to work. In all he was no more that two months out of service and the owner claims does his work fully as well as before.

CASE No. 4. Called by a neighbor early one morning in September who said his horse was down with colic.

I went out and found the horse laying in the pasture unable to get up, because of tetanus.

We assisted in getting him on his feet when he also started to hop on all four feet striking the ground with all at the same time.

He bounded along for about 300 to 400 feet when he got down again and was unable to get up. I told the owner that his horse had lock-jaw but he decided to kill him as he was 25 years old, and did not want to spend the mony as he was not worth it.

CASE No. 5. November 13, 1914 I received a call from a neighboring town from a butcher who said his driver was acting rather funny.

He said he was stiff all over, refused to eat and in fact was unable to reach for the feed in the feed box. From this information he had given I concluded that it was a case of tetanus, which it proved to be.

When I told the owner that the mare had tetanus he decided not to bother with her, and have her destroyed as he had never heard of any being cured, and asked me whether I did not agree with him.

I then told him of the mortality in tetanus, and also of the success I had had with the treatments I had given to other patients during a period of seven months, however, not forgetting to tell him that there were plenty of chances for the patient to die as I did not want to promise any too much on the strength of those that had made recoveries.

I was told to go ahead and try my luck as the mare was a 5 year old and valued at $300.

I proceeded to look for a nail-prick in one of her feet, and I will say, that was the only foot I tried to examine as she was unable to stand it from the excitement caused by doing so even with the utmost care to keep her quiet by gentle manipulation of the leg.

Realizing that it was impossible to lift her feet, I decided not to excite her any more, and looked for wounds over the rest of the body, but did not find any. This mare occupied the first of 4 stalls, past which the other 3 horses had been driven going to and coming from work.

I suggested that we allot her the last stall to keep her more distant from noise.

We undertook to move her there, but found that she could not move and had to leave her where she was. Her condition was such that she could not open her mouth at all and she surely was a picture of misery.

All the muscles were rigid, having the consistency of a board; the tail curved almost at an acute angle and remained so for several weeks. The membrana nictitans was very evident, covering most of the eye-ball.

The muscles all remained rigid for over 3 weeks except the masseter muscles which relaxed gradually after 4 days of treatment. Grass being out of season, I recommended that carrots be given which were first ground up and mixed with bran and water to a sloppy consistency of which the patient partook rather sparingly for the first few days. As stated before the owner being a butcher, he had many occasions to meet his friends and customers which (contrary to my orders) he permitted to see his lock-jaw horse.

The attendant informed me almost daily that the owner had shown his mare to at least 10–20 persons every day and demonstrated to them how stiff she was by moving her from one side of the stall to the other with the effect that she would bound on her feet like a rubber ball and continued in these spasms for 5 to 10 minutes.

I had very little co-operation in this case as far as the owner was concerned as regards quietude and rest, as all the other horses were led past the patient several times a day, his continuous persistence in asking strangers to see the animal and besides allowing 2 dogs around the stable howling incessantly, although given orders to remove them. It was more indifference than contrariness in his actions in allowing the noise, and in spite of it all the animal made a splendid recovery, although more protracted than the other cases, no doubt due to excitant causes. The treatment was the same as the other cases had received, except that I gave more potassium bromide than to the others, figuring that the noise would have to be counteracted.

As stated before the muscles did not relax for some time but after 4 or 5 days the masseter muscles relaxed to such an extent that carrots could be sliced ¼ to ½ inch thich and eaten that way instead of adding them to the mash ground up.

Mashes of bran were given, however, for several weeks. The

mare started to eat hay in about a week in small quantities and rather slowly requiring about 10 minutes to masticate the small amount she would prehend, and laboriously work between her teeth. When dismissing the case I gave orders to put her in a box-stall as she was doing nicely, (after about 15 days) or to exercise her daily which the owner promised to do, but instead turned her out in the yard or let her out in the street during all kinds of weather. A few days after Christmas I had occasion to go to his town and found the animal trotting around the town almost fully recovered, only a little stiffness remaining. I encountered the same trouble in abscesses forming at the point of injection of mag. sulph. but never got any fever above 102° from them. Last June the mare gave birth to a nice colt which is a picture of health. The mother is better than ever (the owner's words) and as he said, "You had to show me."

LATER CASES WHICH WERE IN THE LAST STAGES

In December, 1914, was called to a 7 year old gelding that had stepped into a piece of barbed wire and tetanus developed. When I got there I told the owner that it was useless to treat him as he was more dead than alive then, having not partaken of any feed a week previous to my visit. The owner having heard of my success with my treatment insisted on me taking a chance which I did, giving the serum and mag. sulph. that night but was called on the phone next morning and told the horse had died during the night. This animal was down when called.

In July, 1915, was called to a place where the owner told me his suckling colt about 2 months old had cramps. I went out and found the colt down with tetanus. Did not treat him as there was no chance for his recovery and in fact he died 2 hours later.

In August, 1915, called by a livery-man who told me over the phone that his horse was all stiffened up and that about 2 weeks before he had run away and slipped on the side-walk thereby breaking the skin on both knees. From this I concluded that the knees were infected as most of them get so, after such a long time and went out to treat him.

When I got to the barn I saw a typical case of tetanus with the rigid muscles, the dilated nostrils, the membrana nictitans protruding over the eye, tail curved, the straddling posture and all symptoms that accompany tetanus.

I informed him as to the condition of the horse, of which he thought very lightly as he had heard of the luck I had had in treating them, and figured that I could not lose him.

I proceeded as in the former cases in the line of treatment, with what I thought fair luck as the masseter muscles were relaxing on the 4th day when the owner told me that in his estimation the horse did not drink enough water.

I informed him that if it was within reach and if the horse was thirsty he would help himself, but the owner thought that he could not swallow, although he had swallowed mashes for a day or two.

I told him not to worry and give him water every 3–4 hours so it would be fresh, but instead of doing so with a pail gave it in a pint syringe until he had the patient so excited and nervous that he got down. He called me up. I took my sling but was unable to get him back on his feet. This case was fully as bad as No. 1 but feel almost positive that he would have recovered if the water had not been given in a syringe.

He was past the stage where he would starve to death as he was eating bran mashes and evidence of the muscles of the jaw relaxing. These eight cases have geen treated by me within a period of 15 months and according to my judgment the treatment has been very successful (maybe lucky) in at least those cases where the animal still had a chance. Where the animals were down and in the last stages the treatment was of no value, the same as in other diseases the best of treatment and medicine was of no avail.

In conclusion will say that I have used antitetanic serum extensively as a prophylactic in nail-pricks and wire-cuts and have not had one case develop tetanus after its use.

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CAESAREAN SECTION WITH REMOVAL OF ENTIRE UTERUS

WALTER M. PENDERGAST, Syracuse, N. Y.

On August 5th at 11 A. M. was called to see a Boston bull bitch that was in labor. Upon examination found one hind leg of pup presenting in the passage. At 4 P. M. no progress having been

made I gave her one ampule of pituitrin and another at 7 P. M. with no results. Efforts to extract the pup with forceps failed so at 9 A. M. August 6th I decided to perform Caesarean section.

Patient etherized, field of operation scrubbed with soap and water, shaved and painted with tincture of iodine. Incision about 3½ inches long was made through abdominal wall, and uterus exposed to view. The uterus was gangrenous and in pulling it through the incision it ruptured, so I decided to remove the entire uterus and foetus intact. Ligated the uterus with catgut just posterior to the bifurcation and removed the uterus which contained one foetus about twice the normal size. The ovaries were also removed. The abdominal muscles were closed with interrupted catgut sutures and the skin wound with interrupted silk sutures. The wound was swabbed with tincture iodine before inserting the skin sutures.

The patient had a profuse hemorrhage due probably to the fact that I neglected to ligate the ovarian arteries. On the following day the bitch appeared bright and lively and in ten days the abdominal wound was entirely healed. The bitch made a fine recovery.

Previous to this case I had operated on five bitches with only one recovery. In these five cases the uterus was sutured and returned to its normal position. In a large per cent of these cases the uterus is badly infected and lacerated and I think in such cases the removal of the entire uterus would be productive of much better results. I feel sure that the above case would not have recovered if the uterus had been returned to the abdominal cavity.

On December 15, Congressman Lobeck introduced a bill (5792) providing for the classification of salaries of veterinary inspectors, lay inspectors and clerks employed in the Bureau of Animal Industry. The bill provides that the entrance salary of veterinary inspectors shall be $1400 with an annual increase of $100 until a maximum of $2400 is reached; lay inspectors (grade two), an annual increase of $100 up to a maximum of $1800; lay inspectors (grade one), an annual increase of $100 up to a maximum of $1600. Clerks of the Bureau shall receive an entrance salary of $900 with an annual increase of $100 per annum to a maximum of $1500. Upon evidence satisfactory to the Secretary of Agriculture, promotions shall be made upon the efficiency and faithfulness of the employee.

ABSTRACTS FROM RECENT LITERATURE

A CONTRIBUTION TO THE STUDY OF THE CHANGES IN THE BLOOD COUNT IN DOURINE. N. Popesco, *Archiva Veterinara.*—The strict measures employed by the sanitary police to control dourine in Roumania have not given the desired results. The statistics of the veterinary service show that this disease is on the increase. In 1910, 79 cases of dourine were diagnosed, and in 1911 there were 407 cases.

The cause of the spread of this affection may be attributed, according to Popesco, to the difficulties that are met in making a diagnosis and the insidious development of the disease. The object of the present work is to find a method of early diagnosis based on the relation which exists between certain morphological and numerical changes in the blood cells and the different stages of the disease. The observations of this author were carried out on 11 dourine horses. From these investigations he drew the following conclusions:

1. In experimental or natural dourine, there are constantly found numerical morphological changes in the blood elements.

2. The leucocyte count in dourine, in general, is like that observed in other trypanosome diseases.

3. During the first days (1 to 20) following the infection by the *Trypanosoma equiperdum*, there is an increase of from 1,000,000 to 3,000,000 above the normal in the red cells.

4. Coincident with the increase in erythrocytes, normoblasts are observed and there is a hyperleucocytosis varying between 11,200 and 22,000 which persists in the majority of cases until the animal dies.

5. During the period of incubation the number of polynuclear neutrophiles is increased (79 to 84 per 100) and also the eosinophiles (3 to 11 per 100), as well as other constituents: mononuclears, normoblasts, lymphocytes in stage of division and neutrophilic myelocytes.

6. In the cases of dourine of acute development the diminution of the red cells is not very marked.

The early and certain diagnosis of dourine cannot be made by an examination of the blood constituents.

This examination, however, is susceptible of furnishing helpful data for rendering a diagnosis in doubtful cases.

(NOTE:—In this country during the past four years the Bureau of Animal Industry has made use of a modification of the comple-

ment-fixation test for diagnosing dourine and has found that this method gives highly satisfactory results. It has been possible to detect cases in the very early stages of the disease as well as in the latent forms of the affection. Judging from the results thus far obtained by this procedure, it is quite safe to predict the complete eradication of this malady in the United States in a very few years).

GILTNER.

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ON THE ACTION OF VERATRUM VIRIDE WITH SOME REMARKS ON THE INTERRELATIONSHIP OF THE MEDULLARY CENTRES. William Cramer, Physiological Department, Edinburg Univ. *From the Jour. of Pharmacology and Experimental Therapeutics, Vol. VII—July, 1915— Nos. 1 and 2.*—"The use of veratrum viride has recently been strongly recommended by Dr. Haultain in the treatment of eclampsia. According to him the drug is most efficient in reducing a high blood pressure, slowing the pulse and inducing diuresis, and it was at his request that I undertook the following investigation with the object of finding, if possible, the physiological basis for its therapeutic application."

The author summarizes his experiments with the following conclusions:—

"Veratrum viride in small doses has a selective action of the afferent (pulmonary) nerve-endings of the vagus. In cats it thus produces reflexly slowing or stoppage of respiration and a fall of blood-pressure due to vaso-dilatation. As a rule there is in addition a marked slowing of the heart-beat produced reflexly through vagus-inhibition, but in cats this effect is sometimes absent. These effects of small doses are dependent on the integrity of the vagus nerves.

"The drug after having stimulated the afferent nerve-endings of the vagus, paralyzes them so that a second or third dose is without effect.

"With larger doses the drug in addition to the effects just mentioned, paralyzes the cardio-inhibitory nerve-endings of the vagus and has also a direct action on the medullary centers leading to vaso-constriction and to paralysis of respiration. These additional effects are not dependent on the integrity of the vagus nerves.

"Since large doses of the drug have so many diverse and partly antagonistic actions, the general result of a large dose of veratrum viride is very complex and irregular.

"The manner in which veratrum viride acts reflexly on the medullary centers leads to the conclusion that impulses arriving at the respiratory centre can be communicated to the vaso-motor centre and to the cardio-inhibitory centre and that a central connection exists between these medullary centres.

"The question whether veratrum viride owes its action to veratrine or to protoveratrine or to another alkaloid is discussed and left undecided. It is pointed out, however, that in the light of the present observations, the pharmacological action of veratrine and protoveratrine requires reinvestigation.

"Veratrum viride is therapeutically valuable, as in suitable doses it affords a means of producing a lasting vaso-dilatation through acting reflexly on the vaso-motor centre."

REICHEL.

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FOETAL SAC ATTACHED TO THE GASTRO-SPLENIC OMENTUM OF A RABBIT. P. Bruce White B.Sc. *Jour. Comp. Pathol. and Therap.* This case supports the view of many who consider that the so-called cases of abdominal pregnancy are due to uterine rupture with subsequent extrusion of the fetus.

On the opening of the carcass of a doe-rabbit there was found a large tumor attached by a pedicle to the gastro-splenic omentum, but otherwise free in the abdominal cavity.

Examined more attentively later, the tumor was found to have a stomach shape with greater and lesser curvature. It was attached towards one end of the lesser curvature, which measured 3.5 cm. long. The sac was 6.5 cm. long, 5.4 cm. deep and 3.5 cm. thick. With the fingers it was easily ascertained that the sac contained two bodies movable on each other. The larger occupied two-thirds of the sac and the other the remaining part. The wall of the sac was smooth and polished. An incision of the great curvature revealed a well developed fetus, covered with hair and exhibiting signs of mummification. The sac was of a fibrous texture, adherent in some places to the torn chorion, and in others to the amnion, which closely invested the fetus and contained no fluid. The well developed placenta showed no signs of attachment to the sac wall. Lying in the hollow of the back of the fetus was the second body, a large organized clot. The pedicle showed signs of torsion. The left horn of the uterus was greatly constricted about half its length

and showed unmistakable signs of a rupture. It was evident that the fetus had escaped into the abdomen through a rupture in the wall of the uterus.

LIAUTARD.

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A CASE OF SYMMETRICAL ABRACHIA IN A COLT. P. Bruce White. *Jour. Comp. Path. and Therap.*—Externally the malformation was quite symmetrical, there being no trace of either of the fore limbs. The anterior ends of the scapulae protruded slightly on each side of the weak and narrow chest.

There was considerable umbilical hernia but the other external parts were normal.

On examination of the abdominal viscera, there were found several large cysts on the surface of the liver and mesentery. They contained yellowish fluid. The testes were small but remained in the abdomen.

Dissection showed no traces of the missing limbs. The glenoid cavity was quite unformed but could be ascertained with the fingers.

The whole musculature was rudimentary. The supra- and subspinatus muscles blended into a thin sheet of muscle, extending over the external face of the scapula. The subscapularis was better developed. The serratus magnus was to some extent developed as were also some parts of the pectoral muscles.

The vascular and nervous arrangement could not be made out thoroughly. The brachial plexus was undersized and the brachial nerves suddenly broke up into a brush-work.

The scapulae were the only representatives of the limbs and girdle: they were much reduced. In the left shoulder blade the glenoid and coracoid borders tapered away to a point terminated by a sharp curved process. The spine was feebly developed as a slight longitudinal ridge fading away at either end. The blade of the scapula was to a large extent cartilaginous. There could be found no traces of nodules or any structure which might be regarded as rudiments of the missing limbs or coracoid process.

LIAUTARD.

THE DOG AS A CARRIER OF PARASITES AND DISEASE. Maurice C. Hall, *U. S. Dept. Agric. Bull. 260, Nov. 23, 1915.*—This bulletin, which is intended especially for the use of physicians, veterinarians and health officers, emphasizes the fact that while a dog that is properly cared for and kept within reasonable bounds is an animal with many delightful and useful qualities; on the other hand the dog that recognizes no owner or no restraint, that carries vermin and disease, that kills sheep and destroys property—these dogs must be eliminated. Such dogs are both a nuisance and a danger.

Dogs play a part in the spread of such diseases as ringworm, favus and foot-and-mouth disease, but it is as carriers of parasites that dogs are of primary importance. The bulletin disregards the numerous parasites of the dog which are confined in all stages of their development to the dog or related animals and deals only with those parasites which are transmissible in some form to man and the domesticated animals. Of the latter group the paper deals in detail with those forms which are known from the United States and gives passing mention to those which are of minor importance or not yet known from the United States. Those known from the United States include rabies, which is, of course, still of more or less problematical etiology though commonly regarded as of a protozoan nature, hydatid, gid, cysticercosis of various forms in cattle, sheep, hogs and reindeer, tapeworm and roundworm transmissible to man, tongueworm, fleas and ticks. A discussion of the life histories, so far as known, and of the prophylactic measures, especially as they concern the dog, is given for these parasites.

It is noted that the dog is at present the subject of criticism from three quarters: public health officers are insisting on a restriction of the dog's unwarranted liberties in order to lessen and in time to eliminate the menace of rabies; sheepmen accustomed to being forced out of business by sheep-killing dogs have been taking more aggressive action looking toward eliminating worthless dogs; and parasitologists are insisting that the dog is so responsible for the spread and so essential to the existence of many important parasites that we must curtail his liberty to protect ourselves, our families and our stock from the evil results of his unrestrained wanderings.

M. C. HALL.

VETERINARY ACTIVITY IN THE WAR. Dr. J. Kostrhum, Army Veterinarian, *Tierarzth. Zentralb, 1915, p. 148*—In an introductory remark the author describes the extraordinarily difficult problems which confront the veterinarians in the field, which require, aside from professional skill, considerable physical endurance as well as experience and a keen sense of duty. He further describes in detail a case of dystocia in the mare. The fetus was dead in dorsal position, with the head bent to the side in a way so that the fetus entered the genital organs with its neck. After great effort embryotomy had to be performed, and that with unsuitable instruments. He therefore points out the necessity of equipping the veterinarians with instruments for parturition.

A frequent occurrence among the animals was abortion, especially in the months of January and February, which resulted from mechanical irritation, irregular and abnormal methods of living, extraordinary work with subsequent rapid cooling off, especially where this occurred in a damp, cool atmosphere.

Calked wounds are very frequent, and complications develop as a result of contact with snow in the form of necrosis with an extensive and deep loss of substance. It was therefore very important to bandage the parts and rest the animals affected with such wounds.

Among the infectious diseases, glanders, influenza, scabies, pustular stomatitis and anthrax were observed. Cases of influenza occurred only sporadically, and only rarely was the disease localized in the lungs. According to Kostrhum, this was attained as a result of the individual quartering of the animals, the frequent bivouacing of doors and the frequent change of the location. The author energetically recommends the use of neosalvarsan, since it greatly reduces the period of convalescence and is therefore only apparently more expensive when compared with the symptomatic treatment.

The combating of outbreaks of glanders proved very difficult. Individual cases recurred repeatedly. The measures employed in time of peace could be employed only to a limited extent. Also the insufficient disinfection of the harness, the constant changing of the horses and the use of stables which had not been disinfected were responsible factors in its propagation.

It appears that the chronic cases of glanders which remain in a latent form in the mild climate of the southern theatre of the war turn into acute cases when the animals are transferred to the more

rigid northern climate of the Carpathians, wherefore the author is inclined to accept an influence of climatic conditions upon this disease.

(NOTE:—At the present time the German army has five laboratories at the different fronts for the purpose of testing animals for glanders and other infectious diseases.)

EICHHORN.

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THE PREVALENCE OF FOOT-AND-MOUTH DISEASE.—(ENGLAND). *Leaflet No. 292, Board of Agriculture and Fisheries. From the Lancet—No. 18 of Vol. II—October 30, 1915.*—This disease has been rather prevalent in England during the year 1914. A total of 19 outbreaks is recorded in the report of the Chief Veterinary Officer of the Board of Agriculture and Fisheries. A leaflet on the subject is therefore quite opportune, especially as the malady spreads so rapidly, and a knowledge of its symptoms, the subjects that may be affected, the nature of the infection and its carriers, is important to stock-owners, medical men, and veterinary surgeons. All the domestic animals and ruminants may be infected with foot-and-mouth disease. Human beings may contract the complaint, though they are not the most susceptible class. Cattle are the most susceptible, then come sheep, pigs and goats, and afterwards horses, dogs and cats. All suspected outbreaks of the disease are to be reported immediately to the authorities. The filterable virus to which the disease is due produces its effects usually within 48–72 hours, but the incubation period may exceptionally extend to 10 days. A high temperature—105°F. in cattle, lameness, slavering at the mouth, and smacking of the lips are present. Lameness in a number of animals, especially if noticeable in more than one species—cattle, pigs, or sheep, for example—should arouse the gravest suspicion. The lameness may escape the casual observer, as the animals may be so footsore as to remain lying down. Slavering is not so noticeable in pigs and sheep as cattle. The lesions consist of vesicles appearing about the mouth and on the finer parts of the skin and about the feet at the junction of skin and hoof. In milch cows the milk yield falls considerably and the lesions may appear on the teats and cause permanent injury to the udder. Very young calves may die from enteritis. The contents of the vesicles are infective, as is

also the blood in the early stages of the disease. The virus may be easily destroyed by antiseptics, but under certain conditions which exist in nature it may remain active for months and be carried long distances. Contact and cohabitation of the animals favor the spread of infection, and attendants, utensils, wind-blown saliva, foodstuffs, and water-supply may all act as spreaders of the epidemic. Roads along which affected animals have passed and wagons in which they have travelled may remain infective for some time. As showing the difficulties in the way of controlling the spread of the infection it may be noted that rats, fowls, birds, cats, horses, and dogs may act as carriers of the virus. The leaflet says that human beings may possibly convey the disease to animals. The spread of infection is very insidious. A good deal of evidence has been collected which goes to show that a human being may, through his clothes, make the clothes of others infective. Animals which have recovered may be harborers of infection for a considerable time. The commonest method of infection is through the mucous membranes by way of the alimentary canal; 1/250th of a drop of fluid from the vesicles is sufficient to cause infection. Personal hygiene and disinfection, control of attendants on outbreaks, confining the milk-supply to the infected place and boiling it before giving to other animals, are measures of prevention advocated. The concluding paragraphs of the leaflet draw attention to the importance of reporting the existence, or suspected existence, of the disease promptly. Great loss in stock and money and long periods of prevalence of the disease may result from inability to isolate and stamp out the disease by reason of lack of immediate notification.

REICHEL.

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SCROTAL HERNIA IN A SHIRE-FOAL—STRANGULATION—RADICAL OPERATION—RECOVERY. H. Caulton Reeks, F.R.C.V.S. *Veterinary Record.*—A valuable foal showed an ordinary scrotal hernia. The owner was advised to leave it alone as it would probably disappear as the foal grew, and at any rate caution must be given the operator of its presence when castration was to be performed. Instead of following this advice, the owner bought a truss, applied it and inside of 24 hours violent colic was manifested, strangulation was plainly marked and the case seemed hopeless. However, after casting the

foal, attempts were made to reduce the hernia. They failed and the little sufferer was left to himself after receiving a full dose of castor oil and methylated ether. Directions were given to have small doses of ether given every two hours. The next day the case was still serious, showed less violence in the colic and the next morning all pain had subsided, the foal was in much better condition.

Operation was suggested and consented to by the owner. It was performed as follows: The left scrotal sac was opened and gave escape to a large amount of inflammatory fluid and the protruding intestine exposed. Attempts to reduce it failed, although there was no adhesion. Greater pressure was resorted to but no reduction was obtained. In trying to pull the intestine per rectum it was found that the fingers of the hand in the rectum could touch those of the other hand near the protruding intestine. With great care, a scalpel was used and an incision made through the inguinal ring. After this it was an easy matter to pull the intestine per rectum, and with careful manipulation return the whole into the abdominal cavity. At that moment the testicle made its appearance and was removed with the ecraseur.

During the process of reduction a portion of the intestine appeared enormously thickened, almost leather-like in consistence and with a mottled dark red and purple coloration. The wound of the abdomen was carefully attended to with antiseptics, iodine, sutures, pads, etc., and the little fellow allowed to get up, which he did in a short time and went to suck his dam. The case went on without any serious manifestation and ended with complete radical recovery.

LIAUTARD.

An important bulletin (211) for country practitioners has been published by the Agricultural Experiment Station of the Colorado Agricultural College at Fort Collins, Col., on Colorado Plants Injurious to Live Stock. The authors are Dr. G. H. Glover and W. W. Robbins. A number of the plants are doubtless common to other states and the information and suggestions will undoubtedly be useful over a wide area.

PRESIDENT MARSHALL: Gentlemen, you have heard the very eloquent memorial with reference to our beloved Dr. Salmon. What do you wish to have done with the report?

DR. KINSLEY: Mr. President, I move that we accept it and refer it to the publication committee to be published in our proceedings, or in whatever form they are to be published hereafter.

PRESIDENT MARSHALL: You have heard the motion. Do I hear a second?

DR. MURPHEY: I second the motion.

PRESIDENT MARSHALL: The motion has been made and seconded that the report on Dr. Salmon be received and referred to the publication committee for publication in our annual report. Any remarks? If not, all in favor of the motion signify by saying "aye"; those opposed "no". The "ayes" have it. It is so ordered. A committee was appointed to attend the International Veterinary Association meeting, which committee was composed of Dr. Eichhorn, Dr. Mayo and myself (if you will pardon me for appointing myself one of the committee.) Dr. Eichhorn is present and is ready to report the findings of that committee. We will be glad to have him report at the present time.

Dr. Eichhorn read his paper "Report of the Official Tour of Europe" as follows:

REPORT OF THE OFFICIAL TOUR OF EUROPE OF THE DELEGATES OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION TO ATTEND THE INTERNATIONAL VETERINARY CONGRESS AT LONDON, 1914.

A full report of this tour was published in monthly instalments in the *American Veterinary Review* and it is not deemed advisable to take up the descriptive phase of the tour, since this has been exhaustively treated in that publication. It is respectfully requested that the association adopt the report as published in the *American Veterinary Review* as our official report, and consider this as a supplementary report in which it is aimed to discuss briefly the veterinary education, meat inspection, sanitation, etc., as it impressed us and to point out all features which might be advantageously utilized for the welfare, progress, and standing of the veterinary profession in this country.

Professionally, our tour was an extraordinary success and we wish to express our heartiest thanks to the association, since the numerous honors and courteous attentions shown us everywhere were primarily the result of our official connection with our great association, and we also desire to show our appreciation to all those abroad who spared no effort to make our stay very profitable and interesting.

It is to be regretted that we are not in a position to report on the results of the deliberations of the Tenth International Congress, since only the opening and closing meetings were held by that great organization. The unfortunate and untimely war of the present interfered with the execution of the program of the congress and the few foreign delegates who arrived in London soon returned to their homes in answer to the return call of their countries where their services were needed.

The committee on arrangements for the congress, no doubt, did their utmost to make the Tenth International Congress a success and every one who had the privilege of being at the several functions which were held in connection with the congress was highly impressed with the elaborate preparedness of taking care of the large number of visitors expected and also to make the professional part of the congress of great interest to the participants and also of benefit to the various countries which they had the pleasure to represent. In this regard great credit is due to Sir John McFadyean and Sir Stewart Stockman, who were primarily instrumental in the arrangements for the congress. One could see on their faces the sad disappointment and no doubt they had the sympathy of every one present.

The tour which our party undertook prior to our arrival in Great Britain, however, was enjoyed by every one and gave us an opportunity to observe and visit many veterinary institutions and also to study to a small degree the sanitary organizations of the various countries in regard to veterinary problems.

The party visited the veterinary schools of Brussels, Alfort, Berne, Milan, Budapest, Vienna, Dresden, Berlin, Hanover and Utrecht. We were greatly impressed with the magnitude, equipment and thoroughness of the work in practically every school which we visited. All veterinary colleges in continental Europe are Government institutions which are maintained by regular ap-

propriations from the representative governments. It is natural that under such conditions the schools are developed to the highest perfection.

It is not deemed advisable to take up individually the various schools since that has already been stated. With the exception of one or two, each school impressed us beyond our expectations with its thoroughness. First of all, the preliminary education required to enter at present in all of the veterinary colleges abroad is far beyond our standard, and the various representatives of the colleges informed us that only because of these requirements has the veterinary profession been elevated in these respective countries to the present high position. A high school education is required in every country of continental Europe at the present time to enter upon the study of veterinary medicine. In some institutions they even require a two-year college education in natural science prior to taking up the study of veterinary medicine. The curriculum in the veterinary colleges extends over a four-year period of 9 to 10 months each. In every college great stress is laid upon the clinical work for the benefit of the students, and in most of them ambulatory clinics are being maintained which afford an opportunity for the students to familiarize themselves with the actual work in practice, especially in bovine practice which naturally has to be neglected in the colleges located in large cities.

The spaces reserved for the colleges are located in most instances in convenient parts of the cities allowing these institutions considerable ground upon which the numerous buildings are located. In every school there are various departments, each department having its own building in which to conduct the educational as well as research work in that particular branch. Thus, the subjects of physiology, physics, and chemistry as a rule are housed as one department in special buildings; anatomy in another one; pharmacy, pharmacology and botany have also special buildings, etc. The hospitals are of modern construction and equipped with all up-to-date appliances for the treatment of various diseases. A ward for infectious diseases is isolated from the others. The same arrangement is maintained for the hospitals for small animals. The laboratories are well equipped and the students are required to do all work in histology, bacteriology and pathology, etc., in preparing specimens, sections, etc., connected with the laboratory study of these different branches.

It is aimed at the present to give the students an opportunity to study bovine diseases, and in some institutions various breeds of cattle are maintained and in one particular institution pregnant cattle are brought in for the purpose of affording the students an opportunity to study normal and abnormal parturitions.

A professor is at the head of each department having his corps of assistants assisting him in his work. This is not entirely confined to teaching and a great deal of time is devoted to research work. As a result of this arrangement most of the advancement in veterinary science has originated in veterinary schools abroad and there is a tendency to even extend the experiments and investigations in the various branches in the veterinary colleges. Of course, the teaching staff, also those engaged in research work in these schools devote all their time and attention to their respective work. The members of the faculty and their assistants devote their entire time to the welfare of the schools and the benefit of the students. The arrangement appears especially of great advantage since a professor in charge of a department makes this particular line his life work and develops his branch to the highest standard. As a result one can see in each department splendid collections of various materials which from an educational point of view are all of special advantage to the student. It is needless to point out the advantages of an arrangement of this kind in veterinary education as compared to a practice by which practitioners are charged with the teaching of various branches as is practiced in some of our institutions. The practitioner has no time to study and keep up with all phases of his subjects. Furthermore, he can devote only a small fraction of his time to the preparation of his branch and his teaching cannot be developed to such an extent as would be the case if he could devote all of his time to certain branches for the benefit of the students.

We cannot refrain from briefly mentioning the veterinary museums and libraries which are maintained in connection with every veterinary college visited. The most interesting collections, of pathological and normal specimens preserved by the most recent methods may be seen. The buildings and equipment are everything that could be desired, being equipped with the most modern appliances utilized for teaching. Roentgen apparatuses, projectoscopes, etc., are employed in most every department of the different colleges in Europe.

We must, however, consider that all the European institutions are old and developed gradually to their present standard. Nevertheless, we can do our best to learn by their experience aiming towards the highest standards for the veterinary profession in the shortest time in which it can be attained. Only through requirements of a high standard of the prospective students and through proper veterinary education can we hope to attain a standing which the veterinary profession should command.

The committee had a splendid opportunity to make comparative observations in meat inspection in the various countries and also to compare them with the meat inspection practiced in the United States. One striking feature in this regard is the control of the abattoirs and stock yards in all countries of continental Europe. They are municipal institutions erected and managed by the respective municipalities and in every respect under full control of these authorities. The expenses of maintaining these establishments are met by a fixed charge for each animal killed and accordingly most of the abattoirs are self-sustaining enterprises. With the exception of a few abattoirs we were very favorly impressed with these establishments as they are conducted abroad. It should be considered, however, that the meat industry in Europe is not comparable with the commercial features of this industry in this country, since large packing interests are unknown there and the killing is almost entirely confined either to small wholesale or to individual butchers.

We desire especially to point out the establishments of Germany which appeared to be model in the construction, sanitation and management. In France and Italy we observed that the old "cell system" of butchering was still in vogue. The inspection as practiced in the abattoirs is controlled by the rules and regulations governing the meat inspection of the respective countries or the municipalities. In Germany all animals slaughtered for consumption must be inspected and they have accordingly the control over all food animals which reach the consumer with the exception of those slaughtered for family consumption. The meat inspection system is divided in a similar manner to the one in this country, that is, into ante- and postmortem inspection. Veterinarians employed by the municipalities are in charge of the inspection which from our observations is very thoroughly carried out in all abattoirs we visited in Germany. In some of the other countries we observed a laxity in the inspec-

tion, in one particular instance the veterinarians only passing up and down the aisles without giving the individual carcasses the necessary inspection. The regulations governing the meat inspection vary to some extent in the different countries but the differences are not very striking and are very much the same as those governing the Federal meat inspection in the United States. In this regard it may be mentioned that in the disposition of the carcasses affected with certain diseases the regulations in Europe are much milder than in the United States. In connection with the abattoirs they maintain so-called sanitary abattoirs in which all the condemned and retained carcasses are finally disposed of. A laboratory is also maintained in the sanitary abattoirs for bacteriological meat inspection. The sterilization of the meat which has been conditionally passed is also done in this building, special sterilizers being provided. The meat is cut up into certain sized pieces, placed in baskets and these baskets then shoved into the sterilizers where the sterilization is accomplished under steam pressure. Such meat must be sold under declaration in special shops known as Freibanks.

Some of the abattoirs visited were very impressive in their construction. Architecturally they appeared neat. From a sanitary point of view they possessed everything that could be desired. In the more modern establishments such as are in Dresden the construction was carried out on a very elaborate scale including labor-saving appliances. The large killing halls are so constructed that the buildings are provided with ample light and air and the entire establishment might be considered free from odor; even in the tripe room one is impressed with the absence of disagreeable odors.

Similar arrangements could not be expected in the establishments of this country on account of the variance in the commercial end of the industry. One could readily see everywhere that the meat inspection in this country is at least as efficient as in any European country and the food passed under our method of inspection is assurance to the people of its wholesomeness.

The veterinary service of the different countries could be only satisfactorily discussed by an elaborate description which would take too much space for a brief report of this kind. The sanitary regulations relative to the control of infectious diseases vary considerably in the different countries and one might favorably compare them with the existing conditions in the different states of our country. The least attention is paid to the control of tuberculosis. There is

no concerted effort in Eurpoe towards the control of the disease by legislative measures. In some countries the governments are aiding in their efforts to eradicate the disease from their herds but compulsory measures do not exist in this regard. The compulsory tuberculin test is unknown and no attention is paid to the milk supply with regard to tuberculosis. No control is exerted over traffic with tuberculous animals and a man knowing of this disease in his herd will not hesitate to dispose of affected animals to the best advantage; he will even sell such animals to his neighbor. A great deal more attention is accorded to the control of glanders. In some of the countries which we visited the authorities have successfully eradicated the disease with the aid of stringent measures enforced by government officials. In this regard probably Austria attained the best results within the shortest time since the acceptance of the eye test for the diagnosis of glanders and by the inauguration of other measures for the control of the disease in stables where it appeared they succeeded in eradicating glanders in most of the provinces of Austria. Prussia has also attained similar good results, but the complement-fixation test has been used instead of the eye test. Rabies is being controlled in the various countries by muzzling orders which are strictly enforced, and as a result of this the disease has been practically eradicated from most of the countries which we visited. Compulsory reporting of outbreaks of various other diseases and subsequent strict quarantines are required in most infectious diseases, and thereby the sanitary authorities are always in position to establish the extent of the respective diseases in the different countries.

The veterinary organizations and the methods of control of various diseases as practiced in the different countries have been more fully treated in the general report of the committee.

The failure of the last congress which was to have been held in London, as a result of the European conflict, is to be greatly regretted since various problems were to have been exhaustively treated on that occasion and no doubt all countries would have greatly profited by the resolutions which would have been adopted as a result of the earnest deliberations which are characteristic of the veterinary international congresses. At the present time it is difficult to foresee the time when it will be possible to hold the next congress but it appears that it is not too early for our association to consider the possibility of inviting the next congress to this country.

The neutrality which has been maintained by this country throughout the European conflict would no doubt assure the veterinarians of all nations a hearty welcome. An official invitation from our association in due time will further assure our professional brethren abroad of a successful meeting. The benefit which the veterinarians of this country would derive from such a meeting and the advantages to the country would justify a thorough preparedness and an early consideration of an earnest appeal to the permanent committees of the International Veterinary Congress to decide upon the place of the next meeting in the United States. Such an invitation could be issued as soon as the war clouds disappear and after the restoration of the much desired peace, when each one will return to his former occupation working for the welfare and benefit of humanity.

DR. EICHHORN: Mr. President and Gentlemen: We were treated with the utmost courtesy by the different countries we visited officially and privately, and, no doubt, a great measure of this is due to the fact that the association granted us the privilege of representing it officially during our tour, and for this reason, Mr. President, I move that the association extend a vote of thanks to all those who aided us in our successful trip, and that we express our gratitude for the kind reception we were accorded at every place we visited. Seconded by Dr. Kinsley.

PRESIDENT MARSHALL: Gentlemen, I can heartily endorse everything that Dr. Eichhorn has said with reference to the courteous reception given us while we were abroad. What do you wish to do with the report Dr. Eichhorn has presented?

DR. KINSLEY: I move that the report be received. Seconded.

PRESIDENT MARSHALL: It has been moved and seconded that the report of Dr. Eichhorn be received and referred to the publication committee. If there are no objections, it is so ordered. Now, gentlemen, a motion has been made by Dr. Eichhorn.

DR. HOSKINS: I move the adoption of the motion and a vote of thanks be extended to the people who assisted in making the tour of our committee so successful.

PRESIDENT MARSHALL: It has been moved and seconded that this association extend a vote of thanks to those who made our trip so pleasant and contributed in many ways to the pleasure of the tour. Any remarks? If not, it is so ordered. There are a few suggestions contained in Dr. Eichhorn's report, which I think the association should act upon. One is particularly in reference to this association extending an invitation to the International Congress to meet in America at its next meeting.

DR. HOSKINS: I move that the recommendation be referred to the executive committee to be acted upon as the committee shall see fit. Seconded by Dr. Kinsley.

PRESIDENT MARSHALL: It has been moved and seconded that the question of extending an invitation to the International Congress be referred to the executive committee and that they make a recommendation to the association for action. Any remarks? If not, it is so ordered.

It is now a little past eleven o'clock which was the time appointed for the report of the reorganization committee. Is the committee ready to report?

DR. RUTHERFORD: Mr. President, pardon me a moment, I want to ask one question of Dr. Eichhorn with reference to education. Is it in order to ask it now?

PRESIDENT MARSHALL: I think it would be in order at this time.

DR. RUTHERFORD: My question refers to what you said in regard to a high school education in many of your colleges. Does a high school education in Europe mean more than our high school education, in other words, is there a higher standard there than in our high schools? As I understand it, they do not have high schools such as we have. Am I right or wrong?

DR. EICHHORN: I am not ready to discuss the difference between the education in this country and abroad, but it requires the same number of years to go through the gymnasium, as they call it, or the high school. In Europe they have four years public school and eight years gymnasium, or high school, and in this country we have eight years public school and four years of high school.

PRESIDENT MARSHALL: Is the committee on reorganization ready to report?

DR. CAMPBELL: I do not understand it is. The report was put in the hands of the executive committee with instructions to report back to us at this time, but I understand it is not yet ready.

PRESIDENT MARSHALL: As I understand the proposition, as it stands at present, the executive committee is not yet ready to report. They ask for more time for consideration.

DR. CAMPBELL: I wonder if they would not be willing to set a definite time to make that report so that we will all know when the matter of reorganization will come up so that we may be present to take part in the discussion.

DR. JENSEN: Mr. Chairman, I believe that the executive committee could make that report tomorrow afternoon at the time appointed for the completion of business just before the election of officers, if that is agreeable.

PRESIDENT MARSHALL: You mean tomorrow afternoon?

DR. JENSEN: Tomorrow afternoon before the election of officers.

PRESIDENT MARSHALL: If you mean Thursday afternoon, all we have left is the election of officers and there probably would be a good attendance of the members at that time, and it would possibly be advisable to postpone the matter until Thursday evening at the time of the election of officers.

DR. CAMPBELL: In this connection I want to remind the executive committee and members of the association that the report of the committee on reorganization was made in that very way two years ago, on the last day of the session, and the last session of that day, there was not an opportunity to consider it at that time. It is possible the association might wish to send this back to the executive committee for some minor changes; it is quite probable they

would wish to do so, and it seems to me, it is advisable to have this subject up for consideration one day in advance of the last meeting of the session. In this way the matter may be reported back to the executive committee and time allowed to make whatever revisions the committee may see fit to make before referring back to the association.

PRESIDENT MARSHALL: Tomorrow morning at nine-thirty we have another business session and it is rather short and if agreeable to the members of the association we can bring the matter of reorganization up for consideration at the session tomorrow morning, if that will be agreeable to Dr. Campbell.

DR. CAMPBELL: Yes.

PRESIDENT MARSHALL: Then the report of the committee on reorganization will come up tomorrow morning at ten o'clock instead of nine-thirty. I am sure we will have sufficient time if we begin our meeting at ten o'clock in the morning instead of nine-thirty as scheduled at the previous meeting. There are three or four reports for tomorrow morning in addition, which have not been called at present and there is one other report on the program for today and that is the report of the committee on necrology. Are you ready to make that report, Dr. Campbell?

DR. CAMPBELL: I am waiting for certain information and the report is not yet ready but it will take less than five minutes to get the report ready when I get the information desired and I would rather have some time to complete the report. Will there not be time to get that report tomorrow morning? It will be ready at that time.

PRESIDENT MARSHALL: We will hear your report tomorrow, Dr. Campbell. The report of the committee on advertisements of veterinary remedies by Dr. G. H. Glover, chairman, was listed for tomorrow but Dr. Lyman is here and will make the report now, if you so desire.

DR. R. P. LYMAN: Gentlemen, this report I find in my mail upon arrival here and as it is written by our chairman Dr. George H. Glover, I will simply read the report of the committee as presented by him. I will say that the committee has done a large amount of work by correspondence with the publishers of many papers carrying advertisements and so on.

Dr. Lyman then read the report of the committee on advertisements of veterinary remedies as prepared by George H. Glover, Chairman, as follows:

REPORT OF THE COMMITTEE ON ADVERTISEMENTS OF VETERINARY REMEDIES

GEO. H. GLOVER, Chairman

JOSEPH HUGHES R. P. LYMAN

Mr. President and Members of the Association:

The work of your committee has consisted largely in close inspection of the advertising columns of agricultural and livestock papers, and calling the attention of the owners or managers to those

advertisements which are considered objectionable, and asking them to discontinue the same.

A lawyer was first cousulted for advice as to just how far we could go in denouncing specific fake "cures", without making us personally liable in a suit at law. I was informed that, in substance, we had better "make haste slowly", and while we might express a doubt, and make manifest a disapproval of certain advertised "cures", we must openly brand them as fakes, unless we are prepared to prove the truth of our assertion. The burden of truth resting with the one who dares to publicly denounce an apparent fraud, seems to reverse the order of justice and in this instance places your committee in a dilemma.

Many letters have been written to editors and managers of newspapers, and many arguments have been used to induce them to reject certain questionable advertisements. We have succeeded in some instances and failed in others. Some of these advertisements are so glaringly fraudulent, that it seems like questioning a man's intelligence to assume that he approves of them. A copy of the first letter which was sent to the leading agricultural and livestock papers is as follows:

"Dear Sir:

As chairman of the committee appointed by the American Veterinary Medical Association on advertisements of veterinary remedies, I wish to call your attention to certain advertisements which are being carried in some of the agricultural and livestock papers relative to "cures" for various animal diseases. The very illuminating and deceptive character of some of these advertisements, must be apparent to anyone who will take the time to read them carefully.

Several newspaper editors have sought the co-operation of this committee in helping them to make their papers more valuable by pointing out those advertisements which are looked upon as deceptive or fradulent, and I wish to assure you that this committee will be glad to work with you to this end. We will be glad to offer technical assistance in deciding as to what may be considered proper claims for veterinary remedies. This committee assumes that you are anxious to make your paper perfectly reliable in everything that it publishes, and that you would not knowingly accept an advertisement that is not square with your subscribers.

We have not as yet looked especially into the character of advertisements which appear in the columns of your paper, but we have found some that are objectionable in many other papers. In the interest of a square deal for the thousands of readers of these

papers, we are anxious to see these fake advertisements for veterinary remedies curtailed and eventually entirely suppressed.

Respectfully".

The replies received, were on the whole not very encouraging. Many of these letters were never answered. A very few informed us that they would discontinue any advertisements that we thought objectionable. A few asked us later to point out certain advertisements in question and to "show them" why they were considered objectionable. Some of the replies were decidedly caustic, and inferred that we were actuated by ulterior motives and in substance, that they would exercise their own judgment in the matter of accepting advertisements for their paper.

The revenue from advertisements is an important asset to a newspaper and most editors cannot be reached by an appeal to medical ethics. As to the question of honesty with their subscribers they invariably come back with the argument that the claims made for these remedies may be substantiated, they have no proof to the contrary.

Your committee is of the opinion that very little can be accomplished by mere appeal to editors to discontinue certain advertisements which this committee considers objectionable. Convincing proof of the real merit, or absence of it, must be produced in each instance, by actual experiment in the hands of recognized authorities and the results published to the world.

It is the opinion of your committee that the best way to handle this situation is for the United States Department of Agriculture at Washington or State Experiment Stations, State Boards of Health, Pure Food Officials, or others whose authority cannot be questioned, to make analyses, and if deemed necessary to co-operate with prominent veterinarians in testing these remedies and that the results be published. It is our opinion that this committee might be far more useful by centering their efforts in the line of promoting the actual investigation of the most conspicuous of the long list of proprietary remedies through some of the agencies mentioned, rather than criticising newspaper editors and engendering their ill will and opposition.

The campaign of education should go on with renewed vigor but our efforts should be centered in exposing these miraculous cures one by one and your committee feels that in this way some tangible evidence of good accomplished can be reported at our an-

nual meetings. We have several instances recently where fake remedies have been suppressed in this way.

We would recommend that this committee be continued, but that its work in the future be directed more to seeking the co-operation of recognized authorities in actual investigation of fake remedies and in publishing the results.

DR. KINSLEY: I move that the report be accepted and referred to the publication committee.

PRESIDENT MARSHALL: Gentlemen, you have heard the motion. Any remarks on the motion?

DR. MAYO: Mr. Chairman, I have been especially interested in this question and I heartily approve of the suggestions made by the committee, that is the plan that has been adopted by the American Medical Association, that is, of analyzing and publishing the results of the analysis of these wonderful cures and I believe that much good can be done in connection with the Bureau of Animal Industry and statistics. I would also say in this connection that a matter came to my attention, which probably ought to be brought before the members of this association. There was started over a year ago, a Correspondence Veterinary School that was known as the Northwestern Veterinary College, somewhere in Minnesota or Dakota. They nominally had their headquarters in Minneapolis but Dr. Reynolds who investigated this affair was unable to find any thing more than a post office there. Their literature was formerly sent out from Aberdeen, South Dakota.

It was called to my attention in this way. A physician wrote to me, sending me copies of their literature and saying that the head of the concern was a member of this association. I am happy to say he is not. His name was Krutner. He was a graduate, but not a member of this association. I took the matter up with the various journals who were carrying their advertisements and at my request, they stopped it.

I took the matter up with the post office authorities and showed them that they were not a veterinary college. They carried the names of Dr. V. A. Moore, Dr. W. L. Williams, Dr. A. H. Baker, Dr. Hobday, and several others in such a way as to make it appear they were members of the faculty, although if you read it carefully you would find that that was not the statement made. It was one of the most convincing, wide-awake, and misleading propositions I ever looked over, but finally after referring the matter to the post office authorities, the Northwestern Veterinary College sent out a notice to their patrons that owing to war conditions they had reached the limit of their finances.

DR. HOSKINS: Dr. Mayo has referred to a matter concerning which I was going to ask a question of Dr. Lyman.

I would like to know under what conditions the American Medical Association makes these investigations and analyses. I know that they do in the *American World,* published in Philadelphia, very openly and frankly score pretty nearly all these fake remedies, giving their analyses and so forth, as given by the American Medical Association. They do this openly. They don't seem to fear any prosecution by these fellows.

DR. MAYO: I can say in answer to Dr. Hoskin's inquiry that the American Medical Association have their scientific staff to make these analyses. They are not without their troubles, however. They are spending amounts aggregating hundreds of thousands of dollars with reference to this very proposition and that is the reason why I suggested that we depend upon the analysis of the Bureau of Animal Industry of the United States Department of Agriculture. It would relieve the association of considerable responsibility in some ways, if we could get the government to assume that task.

DR. HOSKINS: It seems to me the Post Office Department ought to refrain from distributing these fake advertisements.

PRESIDENT MARSHALL: Any further remarks? If not, all those in favor of referring the report of this committee to the publication committee, so signify by saying, "aye." Opposed, by the same sign; it is so ordered.

I understand the report of the special committee on veterinary anatomical nomenclature is ready. Is Dr. Newsom here?

DR. NEWSOM: There was just a supplemental report we signed. I would suggest that it be read now. I do not suppose you want us to read this long report containing many scientific names unless Dr. Mayo wants to read it. There were a couple of pages in explanation which were sent to me by the chairman, Dr. Sisson, and it was signed by all the members of the committee. It would only take about five minutes to read it.

DR. HOSKINS: I move that Dr. Newsom read that part of the committee's report.

DR. MAYO: It is upstairs and I will get it.

PRESIDENT MARSHALL: Until Dr. Mayo can locate this report, we will call upon some other committee. Is the report of the special committee on the agricultural college investigation ready? Is Dr. Farrington here? If not, the secretary can read the report.

REPORT OF COMMITTEE ON VETERINARY EDUCATION IN AGRICULTURAL COLLEGES

At the forty-ninth annual meeting of the American Veterinary Medical Association held in Indianapolis, Indiana, in 1912, the following preamble and resolution was passed:

> "Whereas, The veterinary instruction given in Agricultural colleges to students pursuing the four-year agricultural courses varies materially in the several agricultural colleges, and
>
> Whereas, Graduates of agricultural colleges may receive one-year time credit in veterinary colleges, accredited by this association, providing said graduates in agriculture have had sufficient veterinary science; be it
>
> Resolved, That the president appoint a committee of three to outline such sufficient veterinary science,

and to recommend to agricultural colleges the extent and scope of veterinary science which this association believes should be included in such agricultural courses.''

Former President Mohler appointed as the committee of three called for in this resolution, Dr. Paul Fischer, State Veterinarian, Columbus, Ohio; Dr. James B. Paige, Veterinarian to the State Experiment Station and Agricultural College, Amherst, Massachusetts; andDr. A. M. Farrington, at that time Assistant Chief of Bureau of Animal Industry, Washington, D. C. This committee was unable to meet for a conference but by correspondence began an inquiry to ascertain the character and amount of veterinary instruction which was given to agricultural students at the several agricultural colleges of the United States. This was no small task, and as indicated in the preamble it was found to vary materially in the different agricultural colleges extending from some colleges which make no mention even of veterinary science in the curriculum to the other extreme where three or four veterinarians were employed in teaching and were provided with an extensive equipment which might well be the envy of some veterinary colleges. Because of these variations in the amount of veterinary instruction the committee considered that the problem given them was to outline a plan by which veterinary colleges can determine how much credit in veterinary science can be given to graduates of four-year agricultural colleges who wish to take up the study of veterinary medicine in a veterinary college. Since it seems impracticable to bring about a uniformity in the courses of instruction because of differing local conditions and different demands upon the colleges, your committee after looking into the matter decided that the only advisable method was to admit agricultural graduates to accredited veterinary colleges on the certificate plan which is that each applicant should be admitted on a certificate signed by the proper college authorities setting forth in detail the scope and kind of studies which he has passed successfully. On this basis he was to be admitted and given such advanced standing as seemed to be indicated by his scholarship.

The committee submitted a report to this effect to the fiftieth annual meeting of the association (see page 245 of the proceedings of that meeting). In the discussion which followed the report was characterized as disappointing and not what was desired. The idea of those persons who drafted the resolution was to prepare a guide

to those teaching agricultural students and not a guide to those conducting a veterinary college. President Marshall accordingly reappointed the same committee with instructions to again attack the problem and bring in a report which shall recommend the extent and scope of a course in veterinary science at agricultural colleges. At first sight it appeared to be almost a hopeless undertaking to expect agricultural colleges to adopt a uniform course, as conditions differ so widely in states where these colleges are located. However, it may be helpful for this association to adopt a standard course for agricultural students and the several colleges may work towards such standards gradually from year to year as changes are made in the personnel of the teachers and demands for instruction. Such a course may have a similar effect on veterinary education as the now famous course promulgated by the Government commission on veterinary education as printed in Bureau of Animal Industry circular 150. Your committee has devoted much time and thought to this matter and has received the co-operation of twenty-five or more veterinarians now engaged in teaching veterinary science in agricultural colleges and as a result of our labors we beg to submit the recommendations as given at the end of this report. Some words of explanation may be necessary in this connection.

In the first place is seems advisable that each agricultural college should employ at least one veterinarian who shall devote his entire time to teaching veterinary subjects or if the classes are small he may devote a portion of his time to experimental station work. It has been suggested that at some small colleges it will be necessary for the veterinarian employed to earn a part of his salary by outside practice. But the veterinary department of an agricultural college should be important enough, and of sufficient consequence, to command the time of a competent veterinarian without it being necessary for him to do outside work or practice his profession to earn a portion of his livelihood.

In the second place one objection to the course as recommended is that the amount of teaching is more than can possibly be accomplished at the smaller colleges and while this may be true to some extent the ideal should be in advance of what can be easily accomplished, and the greater number of preliminary studies the student has pursued will give him a firmer grasp of the instruction to be given later. These preparatory studies can easily be covered in the ordinary high school or other preliminary instruction. In one

agricultural college one requirement to enter the veterinary department is a reading knowledge of a foreign language in addition to high school graduation and upper division studies which makes the entrance requirements of this institution higher than any veterinary college in the United States.

In the third place the majority of agricultural colleges are provided with well-equipped departments of animal husbandry which far exceed the equipment of the veterinary department and while there is no objection to good instruction in animal husbandry, especially in some states where live stock raising is a leading industry, yet this should be a pre-requisite to the study of veterinary science and not allowed to exceed it in importance.

In the fourth place it seems advisable that considerable time should be devoted to the study of anatomy, not in a technical way as at a veterinary college, but for the purpose of becoming more familiar with the specimens of animal life that the successful stock-man is to raise on his farm, this instruction to begin with the foundation, the bones, and then lead on to a general understanding of the superstructure of the animal. One teacher in this line recommends that special stress be placed on the study of the skeleton as it seems to help the student during his first-year in college more than any other branch of anatomy. It is quite as essential for a veterinarian to insist on this knowledge as for an animal husbandman to require a knowledge of the color, markings, characteristics, etc. of the farm animals which he describes in his teachings. In teaching veterinary anatomy it is not imperative that the carcass of the horse should be secured, treated with preservatives and systematically dissected as at a veterinary college, but small animals such as a rabbit, dog or cat can be used to demonstrate the organs and gross structures as preliminary to further instructions. At one college the dissection is confined to the rapid dissection of the horse carcass and the observation of cattle, sheep and hog viscera at an abattoir. However, if laboratory facilities can be provided so that each student can dissect a small animal it will greatly add to the interest in the subject and will impart a general knowledge of gross anatomy sufficient for the ordinary live stock grower. In some agricultural colleges instruction is given to agricultural students in histology but this does not seem advisable unless the college is giving a pre-veterinary course which is different and distinct from the ordinary instruction to agricultural students.

In the fifth place it seems advisable that the function of the organs of the living animal should be taught since it is important to know the framework of the animal it is also highly important to know the uses of the organs within that framework. This is embraced in the study of physiology. One teacher who is allowed a short period only for instruction states that he gives anatomy and physiology during the same course of lectures as he believes that agricultural students who have rather limited time for this work can more easily correlate structure and function if they are taken up together.

In the sixth place all will admit the importance of extensive knowledge of the reproduction of farm animals, together with the hygiene of pregnant animals and the care of the new born. Some teachers recommend that embryology be also taught in this connection, and while this may be advisable when there is a sufficient number of hours of instruction available, yet it is not essential for the ordinary agricultural student.

In the seventh place it is generally admitted that instruction is needed in the common or sporadic diseases of live stock, especially those due to improper care and handling. The dominant idea of all veterinary instruction to agricultural students should be the importance of prevention of disease rather than ability to cure disease after it has once been established. Along with the instruction in prevention of disease some time should be devoted to the common remedies which may be used. In some colleges this is taught under the heading of materia medica and therapeutics but it is believed that these subjects should not be included as such in the curriculum for agricultural students but should be preserved for the strictly veterinary college.

In the eighth place it is found that there is a wide variation of opinion regarding the teaching of clinics or practical laboratory work at the agricultural college. If it is true as stated by one teacher that 50% of all the agricultural students in agricultural colleges today come from cities or large towns and have had little or no experience in handling animals it is important that practical instruction in this line be given especially in harnessing, hitching, driving and handling of horses. If this work is not taken up by the animal husbandman practical demonstrations in this line should be given. The tendency is for this teaching to develop into a regular veterinary clinic which is not desired and is usually a waste of

time. One difficulty about this matter is that a variety of suitable cases is very limited but so long as the instruction can be confined to such cases as the well-educated stockman ought to know the effect is satisfactory but when it comes to performing operations such as neurectomies, operations for roaring, or attempts to prescribe for cases of pneumonia or similar complicated diseases the time of the student could be more profitably used elsewhere.

In the ninth place it seems advisable to add that if the course of study is so much crowded that there is no time to cover the whole field of animal plagues the instruction may be confined to the more common infectious diseases which the ordinary farmer is likely to meet with. At one college the veterinarian states that his main work as far as veterinary teaching is concerned is to dwell stronly on prevention, sanitation, better farm management, and instruction concerning the treatment of simple and emergency cases in a proper manner and to carry on the work of the veterinary department in a way that the agricultural graduates will have the highest respect for intelligent expert veterinary service and to know when they are receiving it. The amount of veterinary pathology given in this connection should be very meagre and in fact confined to the merest outline sufficient to cover the subjects.

In the tenth place it is advisable that agricultural students should be taught the truth that the employment of a well-qualified veterinarian is necessary for the treatment of diseases of live stock and that such a veterinarian is an economic asset to every agricultural community. It is asserted by one teacher that a farmer can not be his own veterinarian any more successfully than he can be his own physician, the only difference being that in one case it is usually a monetary consideration and in the other a human life is involved, and that as soon as an abnormal condition exists or there is a diseased process established, that the best advice and assistance should be called.

As stated in the beginning of this report it is very difficult to establish a course which will be satisfactory under all conditions. In general it may be said that it is not well to give the students an opportunity to "specialize" in veterinary science because if they do that they are apt to consider that they are qualified to engage in general practice. To do this they should attend a regular veterinary college.

(To be continued)

SOCIETY MEETINGS

The Sixth Semi-Annual Meeting of the Central New York Veterinary Medical Association was held at Syracuse, New York, on November 23rd, 1915, with the following members present:

H. A. Turner, A. J. Tuxill, W. L. Clark, M. W. Sullivan, L. G. Moore, A. E. Merry, F. E. York, E. E. Dooling, J. C. Stevens, W. B. Switzer, J. G. Hill, R. C. Hurlbert, J. M. Currie, W. M. Pendergast, J. H. Hewitt, J. A. Pendergast, Frank Morrow, J. V. Townsend, J. K. Bosshart, A. L. Danforth.

Visitors: Dr. D. H. Udall, of the New York State Veterinary College, Ithaca, N. Y., and Mr. MacClary.

Preceding the business session a clinic was held at the infirmary of Dr. H. A. Turner at 938 South Salina Street, occupying the hours from 10:00 A. M. to 1:00 P. M. The subjects were:

Case I. Brown gelding: Median neurotomy: Dr. H. A. Turner, surgeon.

Case II. Black gelding: Trephining and extracting tooth: Drs. J. A. Pendergast and J. G. Hill, surgeons.

Case III. Gray gelding: Firing spavin: Drs. W. L. Clark and J. V. Townsend, surgeons.

Case IV. Grade Holstein bull: Demonstration of physical examination of cattle: Prof. D. H. Udall, demonstrator.

Case V. Bay mare: Median neurotomy: Drs. H. A. Turner and Frank Morrow, surgeons.

Following a lunch at the infirmary, the members adjourned to the Saint Cloud Hotel, where the business session was called to order by Dr. Frank Morrow, Vice-president; Dr. E. E. Dooling, President having been called away. The usual routine business was conducted. The death of Dr. J. S. Elliott, of Clinton, N. Y., a member of the association, was reported and the secretary was directed to send a letter of condolence to the family and to inscribe same on the minute book of the association.

The matter of illegal practice was discussed and a resolution adopted constituting the members a committee of the whole to report illegal practitioners to the secretary who was authorized and directed to forward any such reports to the attorney-general's office for attention, urging prompt action. The advisability of publishing the names of illegal practitioners in the newspapers was also discussed and laid on the table pending an investigation as to the legality of such action.

The program consisted of the following addresses, papers and case reports:

Address: "Veterinary Education"—Dr. D. H. Udall, New York State Veterinary College, Ithaca, New York.

Paper: "Foreign Bodies in the Stomach"—Dr. J. M. Currie, Rome, New York.

Paper: "Meat and Milk Inspection and Its Effect in the City of Syracuse"—Dr. A. E. Merry, Syracuse, New York.

Case Reports: "Unusual Digestive Trouble in Cattle"; "Rupture of the Diaphragm with Recovery" (subject at clinic for examination); "Caesarean Section with the Removal of the Entire Uterus of Bitch with Good Recovery"—Dr. W. M. Pendergast, Syracuse, New York.

Case Report: "A Peculiar Case of Azoturia with Great Amount of Sloughing at the Shoulders"—Dr. Frank Morrow, Rome, New York.

A full discussion was had upon all of the matters thus presented. A unanimous vote of thanks was extended to Dr. Udall for attending the meeting and contributing to the program.

At 5:30 P. M. the meeting adjourned and was followed by a dinner at the St. Cloud Hotel which was well attended.

(Signed) W. B. SWITZER, Secretary.

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BUREAU OF ANIMAL INDUSTRY EMPLOYEES

Digest of Proceedings of Joint Conference of Representatives of National Assn. Bureau of Animal Industry Employees and Representatives of the Bureau of Animal Industry Meat Inspectors National Assn. held in room 802 Live Stock Exch. Bldg., Kansas City, Mo., Sept. 26, 1915.

The members of this Conference were appointed by the executive committees of their respective associations to attend.

The following B. A. I. Employees were in attendance at the Joint Conference:

Representatives of N. A. B. of A. I. E.:

Drs. Rohrer and Curry; Mr. Stephen Bray, (L. I. Gr. No. 1) and Mr. Jas. T. Sandy (L. I. Gr. No. 2).

Representatives of B. A. I. M. I. N. A.:

Messrs. Stevens, Greene, Goodman, Stratton and Whalin. (Lay Inspectors Grade No. 2).

On motions, Messrs. Bray and Whalin were elected Chairman and Secretary, respectively, of the Conference Committee.

Mr. Stevens expressed the desire and willingness of the M. I. Natl. Assn. to co-operate with the N. A. B. of A. I. E. in securing a salary classification bill which would be just and equitable to all classes.

Motion carried that the Conference recommend to the Nat. Secretaries of each of the National Assns. that they instruct the local secretaries to call mass meetings of all B. A. I. Employees, regardless of class, grade or affiliations for the purpose of discussing and adopting or rejecting, the recommendations hereinafter recorded. That at stations where two separate organizations exist the secretaries of each organization shall issue call for said meeting jointly and that the Chairman, Secy. and other officers at said meetings should be other than the present officers of either association, and that the National Officers be guided in their efforts by the preponderance of sentiment thus ascertained

Motions carried that the following salary schedules be recommended:

	Minimum	Maximum
Veterinary Inspectors	$1400	$2400 per annum
Lay Inspectors Grade 2	1200	1800 per annum
Lay Inspectors Grade 1	900	1600 per annum
Clerks	900	1600 per annum

Above maximums to be attained through annual increases of $100.

Motions carried showing that it was the sense of the committee in conference that the introduction of a bill embodying the schedules herein suggested is desirable, that its provisions are fair, just and equitable, that it should be endorsed by all B. A. I. Employees, regardless of class or organization affiliations and that every legitimate means should be used to promote its final passage. Motion unanimously carried that the conference recommend to all B. A. I. Employees that whatever schedules were finally adopted and presented to Congress should be enthusiastically supported by all.

Motion carried that the conference suggest that in all cases the clause "All other promotions to be made at the discretion of the Secretary of Agriculture" be substituted for the clause "Further increase in salary to be made at the discretion of the Secretary of Agriculture". It was held that such a clause would give the Secretary greater discretionary powers in his selection of men from the ranks for special duties. It was also maintained that efficiency should stand an equal show with seniority.

Motion carried that the good will and harmony manifested throughout this conference demonstrate its success and forecast good results for all parties concerned. The committee recommends that frequent conferences of a similar character be held in the future, to the end that harmony and unity of action may be obtained in promoting the interests of all B. A. I. Employees.

Conference adjourned *sine die*.

STEPHEN BRAY, *Chairman*. C. V. WHALIN, *Secretary*.

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Report of Committee on Resolutions of the North Eastern Indiana Veterinary Association, appointed by A. Buckmaster, President, at a called meeting November 29th, 1915.

OBITUARY

Dr. William Frederick Myers was born in Fort Wayne, Indiana, Nov. 15th, 1864, and died in St. Joseph Hospital, Nov. 27th, 1915, from a gun shot wound received while hunting on Thanksgiving day, and was buried from the "old home" in which he was born, Nov. 29th, 1915.

He graduated from the Chicago Veterinary College in the Class of '89 and immediately entered into and continued in practice in Fort Wayne, Ind., until his death.

He was a member of the American Veterinary Medical Association, the Indiana Veterinary Medical Association, the North Eastern Indiana Veterinary Association, and at the time of his death was President of the State Board of Veterinary Medical Examiners.

He was an ardent sportsman and especially was he a skilled fisherman and it was his delight to bring in the first catch of bass in the early spring. He had an old fashioned cottage, "The Old Kentucky Home," (on the very brink of Lake Barbee), whose walls, floor and ceiling were covered with relics and skins, and it was his great delight to entertain visitors, giving the history of each article, and if none existed, he would manufacture one, that would make the hearers gasp for breath. He had a genial disposition, a kind word and a sunny smile for every one, and best of all a heart as tender as a girl's. It was the privilege of the writer of this sketch to be one of his intimate friends, and no one feels his loss more keenly.

WHEREAS, It has pleased the Almighty in His infinite wisdom to remove from our midst our beloved friend and brother, Dr.

William F. Myers, it is fit and proper that this association should record its feeling of grief, therefore be it

RESOLVED, That in the death of our friend and brother, this association mourns the loss of a valued member, and be it further

RESOLVED, That we extend to the family, our heartfelt sympathy in this our common bereavement, and that a copy of these resolutions be spread on the records of this association.

A. H. STOKER,
O. G. WHITESTINE,
O. L. BOOR,
Committee.

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VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY

(October Meeting)

The regular monthly meeting of this association was called to order by the president Dr. H. D. Gill in the lecture room of Carnegie Laboratory, 338 East 26th Street, New York City, Wednesday evening, Oct. 6th, 1915.

The minutes of the June meeting were read and approved.

Dr. Rogers of Woodbury, N. J., was unable to be present so the next order of business was taken up.

Dr. Ellis gave a very interesting account of the trip to Oakland, California, and also of the annual meeting of the A. V. M. A.

Dr. Ackerman as delegate to the N. Y. State Veterinary Medical Society reported on the annual meeting held at Ithaca, N. Y.

Dr. W. Reid Blair also a delegate to the State convention endorsed Dr. Ackerman's report and also supplemented the same.

Dr. D. W. Cochran, chairman of the committee, appointed to draft resolutions on the death of Dr. John A. McLaughlin, presented the same, and they were unanimously adopted, ordered spread in full upon the minutes and a copy sent to the family of the deceased.

Dr. Goubeaud, chairman of the committee, appointed to draft resolutions on the death of Dr. W. H. Wright, reported that he had drafted the same and would forward them to the Secretary. This report was also adopted and the resolutions ordered spread in full upon the minutes and a copy sent to Dr. Wright's family.

The secretary then read Dr. A. Downing's letter in reference to the case of Dr. Julius Cavazzi in which he stated that before

further action could be taken it would be necessary for this association to prefer formal charges.

Dr. Griessman stated that as a member of the prosecuting committee of the State Society he had instituted proceedings in this case.

After a rather lengthy discussion preceding which a letter addressed to this association from Dr. Cavazzi was read by the secretary, Dr. Ackerman moved that no further action be taken by this association in the case of Dr. Cavazzi for the reason that the State Society is now prosecuting. This motion was seconded and carried by a large majority.

The bills for floral tributes to Dr. McLaughlin and Dr. Wright were presented and ordered paid.

In the question box the following question was asked: What is meant by Approved Veterinarian in the Dept. of Agriculture?

Dr. Gill answered that the Dept, of Agriculture has an approved list of veterinarians whose tuberculin tests are approved by the same. The tests made by laymen who conform to the rules of the Department of Agriculture are also accepted.

This subject was discussed at some length and Dr. R. W. Ellis moved that "It is the sense of this meeting that the secretary be instructed to write the Commissioner of Agriculture of New York State urging that applicants for approval to their tuberculin tests be referred to this Association for endorsement. This motion was duly seconded and carried.

Dr. Theo. A. Keller asked about the yearly testing in New York City.

Dr. Gill answered that it has been decided that a blood test should be made at least once a year and every horse tagged for identification. It is proposed to test every horse in the city, but the laboratory facilities of the Department of Health at the present time are inadequate to handle this volume of work. It is suggested that the State Department of Agriculture equip a laboratory to carry on this work.

A discussion of quarantine regulations then followed.

It was unanimously resolved that an expression of thanks be tendered Acting Dean, S. M. Brown, for the use of the lecture room in Carnegie Laboratory, as a meeting place.

No further business appearing the meeting adjourned.

ROBERT S. MACKELLAR, Sec'y.

(November Meeting)

The regular monthly meeting of this association was called to order by the president Dr. H. D. Gill in the lecture room of Carnegie Laboratory, November 3, 1915, at 8:45 P. M.

The minutes of the October meeting were read and approved.

Dr. T. B. Rogers who was scheduled to read an interesting paper on Anthrax was unable to be present.

A discussion of the Veterinary Law of New York State relating to the new provision requiring practitioners to register annually during the month of January with the State Board of Regents, then took place.

The secretary read the law as amended and a general discussion of the changes followed.

On motion, the secretary was instructed to notify the members of this association calling attention to the new registration provision of the law.

A communication from the Commissioner of Health, Dr. S. S. Goldwater, calling the attention of this association to the sale of a colic remedy by one P. Harvey Flynn of 145 Duane Street, New York City, said to contain opium and alcohol was presented to the association for consideration.

Dr. H. Stark stated that he had called the attention of the Department of Health to this case and had also notified the U. S. Attorney General and the U. S. District Attorney.

After some discussion the secretary was directed to refer this case to the U. S. Internal Revenue Department, stating the facts and asking for a ruling regarding the same.

The question was asked "Does the law require a veterinarian to report lesions of glanders found on post mortem examination in an animal that has died of colic.

Dr. Gill answered this by stating that the public health law requires any and all lesions of glanders no matter how they may be found, to be reported to the proper authorities inside of twenty-four hours.

Another question asked was "How long is it necessary to expose a dog suffering from a fractured pelvis to the X-ray, to obtain a good negative?"

Dr. Louis Griessman who has been quite successful in X-ray

work stated that five seconds or less exposure would give a good negative.

After a short general discussion the meeting adjourned.

ROBERT S. MACKELLAR, Sec'y.

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Resolutions Adopted at the Meeting of the United States Live Stock Sanitary Association, Chicago, Ill., December 1 and 2, 1915.

WHEREAS, the live stock interests of this country have recently been menaced by that serious animal plague, foot-and-mouth disease, which many foreign countries have been unable to successfully control; and

WHEREAS, the methods employed by the Bureau of Animal Industry of the United States Department of Agriculture have successfully eradicated previous outbreaks in this country and by so applying the same methods have succeeded in practically eradicating the recent and most extensive outbreak, therefore be it

RESOLVED, that this association unequivocally endorses and sustains the methods employed by the Bureau in the stupendous task of eradication.

WHEREAS, the many owners of live stock have recently suffered tremendous losses from foot-and-mouth disease by the destruction of stock for the public good, be it

RESOLVED, that this association recommends that the Federal and State Governments be liberal in their appraises and recompense the owners for losses to the extent of the full commercial value of the animals destroyed.

WHEREAS, there has been some criticism of the officials of the Bureau and the methods employed by them with the resulting agitation to replace the Chief of the Bureau of Animal Industry by a man who is not a scientist especially trained in animal sanitation; and

WHEREAS, the gratifying results obtained by the present personnel have demonstrated beyond doubt their executive ability, be it

RESOLVED, that this association hereby announces that it would unqualifiedly disapprove of the appointment as Chief of the Bureau of a man lacking scientific training and experience in dealing with animal diseases.

WHEREAS, the Secretary of Agriculture has called a conference on foot-and-mouth disease to enable his department to give a hearing to all persons desirous of expressing their views regarding the disease and the methods of its control;

WHEREAS, the Honorable Carl Vrooman, Assistant Secretary of Agriculture, has very efficiently and acceptably conducted such a conference with fairness to all, be it

RESOLVED, that this association commends the action of the Secretary of Agriculture and expresses its sincere appreciation of the work of the Honorable Carl Vrooman.

WHEREAS, It is necessary to encourage the maintenance of pure-bred herds free from tuberculosis and from which healthy animals may be purchased with some dependable assurance that such stock is free from tuberculosis, therefore be it

RESOLVED, that this association urgently request the United States Department of Agriculture to take some steps whereby all herds free from tuberculosis may be given publicity to the end that the maintenance of free herds may be encouraged.

WHEREAS, it has been reported to this association that the Manager of a creamery in Steuben County, New York, on learning of an outbreak of foot-and-mouth disease had been reported in his vicinity, immediately applied careful and intelligent methods of sterilization as advised by Sanitary Veterinary experts, and

WHEREAS, this association is on record as advocating the sterilization of creamery by-products that are returned to farms, be it

RESOLVED, that the United States Livestock Sanitary Association at its Nineteenth Annual Meeting held in Chicago, 1915, hereby formally commends the aforesaid manager and expresses its appreciation of his diligence and care which have saved the country and the State of New York the expense of suppressing an outbreak of foot-and-mouth disease which, without such precaution, would have probably followed and which doubtless would have meant a large expenditure of public funds. This association further expresses its conviction that such co-operation as is here recognized, on the part of the many people concerned, would greatly reduce the extent and expense of outbreaks of contagious animal diseases throughout the country.

COMMUNICATIONS

Editor of the Journal of the American Veterinary Medical Association, Ithaca, N. Y.:

DEAR SIR: In the November number, I saw an article on anthrax in a man at a New York hospital. We had a case of anthrax in a man in Franklin County in the town of Dickinson. Some years ago this last summer an outbreak of anthrax occurred on the farm of William Burnett. The loss was nine cows and three horses.

I was ordered by the Commissioner of Agriculture at Albany to investigate and found it to be anthrax. I vaccinated the rest of the herd with No. 1 and No. 2 anthrax vaccine. No more deaths occurred that year. That fall all of the carcasses that had been buried were burnt with crude sulphuric acid. The following year, in the month of July, another death occurred. The owner skinned the animal and buried the carcass without notifying me. That was six years ago. This year one died in October. He skinned the animal and sold the hide to a dealer in the village of Brushton. This man Burnett had a pimple on the back of his hand but paid no attention to it. Eight days from skinning the dead cow his hand and the under portion of his arm were badly swollen. He consulted a physician, who advised him to go to the Ogdensburg hospital. When he got there Dr. Madill tested his blood from the sore hand and found anthrax germs. Blood from other parts of the body also showed anthrax germs. He wired to Washington for some serum. It took two days to get it. By that time Mr. Burnett was in a very bad condition. Being a clean man and of good habits, after treatment with the serum for a few days he recovered sufficiently to return home.

I was sent there to investigate and vaccinate the rest of the herd. There were no more deaths. I burned the carcasses with the above acid. I went there afterward to try to locate the place where the cow was buried six years ago, but could not until after Mr. Burnett came home from the hospital. He showed me the place. I had posts and a wire fence constructed around the place and burned the grass all over for twenty feet square. No doubt the germs had worked out to the surface in due time from the carcass which had not been properly destroyed.

A. W. BAKER, Brasher Falls, N. Y.

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ARMY REORGANIZATION

The work of Doctor Hoskins and the A. V. M. A. Legislative Committee of last year shows its effects in the present Congress.

Editor of the Journal of the American Veterinary Medical Association, Ithaca, N. Y.:

It will be of interest to the veterinarians throughout the country to know that the Chairmen of the Senate and House Military Com-

mittees have the profession in mind in the scheme of army reorganization which is part of President Wilson's preparedness program. In Senator Chamberlain's proposed Army Bill, the Veterinary Service is incorporated as paragraph 17. In Congressman Hay's proposed reorganization plan the Army Veterinary Service is incorporated in paragraph 13. Both measures practically incorporate the ARMY VETERINARY SERVICE bill that was before Congress last year.

Now that we know that the Chairmen of the Military Committees of Congress have our interests in mind, it is of the utmost importance for the profession to see that their respective Congressional representatives do their part in keeping our VETERINARY SERVICE MEASURE incorporated in the final Army Reorganization measure when it is considered.

R. J. F.

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REVIEWS

THE PRINCIPLES OF VETERINARY SURGERY

LOUIS A. MERILLAT, V.S.

Including an Authorized Translation, Enlargement, and Rearrangement of General Veterinary Surgical Pathology by Professors C. Cadeac, P. LeBlanc, and C. Carougeau, of the Veterinary High School at Lyons, France. Second Edition revised and enlarged. Alex. Eger, Chicago, Ill.

The revised edition of The Principles of Veterinary Surgery by Merillat will be quite a help to the teacher of general surgery, and also to the student who is desirous of having one book that will cover the entire field. The busy practitioner will find in it a vast fund of information especially along the lines of some of the newer phases of veterinary surgery, the development of recent years. Due to its conciseness the information the book contains is made readily available.

The book is divided into two parts. Part I includes: First, Regenerative or Reparative Processes in the animal tissues, giving a clear and thorough description of simple reparative processes, method of healing in wounds and in individual tissues. A short chapter on inflammation follows with a very clear and distinctive classification of the different forms, with a thorough study of the "anatomical processes of inflammation" given in a concise form so that one can readily grasp the subject with the minimum amount of reading. The etiology and treatment of fever or pyrexia are emphasized.

Degenerative processes, which are so important to the veterinarian, have been well outlined, thoroughly discussed, especially in regard to etiology and treatment.

Bacteria and their relation to general surgical conditions have been given a very prominent place, chapter V being devoted to the classification and study of the different forms of organisms commonly met with in surgical conditions. The surgeon realizes the importance of microörganisms in surgical conditions, as he must always battle to prevent wound infection. The author no doubt had this in mind when he says, "nearly all of the pathogenic microörganisms might on some pretext or other, be classified with the so-called 'surgical bacteria' "; and "the surgeon must cope with all bacterial forms that are capable of producing local or systemic derangement by directly invading the trauma and all of those that produce diseases requiring surgical intervention". A short and clear description is given of the most common organisms.

Veterinarians are realizing more every day the importance of considering immunity and the different methods of producing immunity in coping with the various disease processes. From the surgeon's standpoint this is of great importance in protecting the animal against infection following surgical operations. Raising the opsonic index previous to major surgical operations is worthy of trial in cases where the operation can be delayed. In chapter VI there is a very concise discussion of the types and theories of immunity, opsonins, sera, vaccines, which commends itself to the student and practitioner.

Surgical restraint which very properly belongs to general surgery is given sufficient space to familiarize the student with the common methods used in preparing animals for surgical operations.

Progressive veterinarians know the importance of anesthesia for controlling animals in both major and minor surgical operations. The time is coming, and we hope very soon, when veterinarians will resort to anesthesia in practically all major operations, in justice to the patient, the client and themselves. The methods of anesthesia (local and general) are taken up at considerable length in chapter X and all phases fully discussed.

One of the very essential things a surgeon should take into consideration is proper asepsis, antisepsis and the sterilization of the hands, instruments, etc., before attempting any surgical operation. This subject has been given the prominence it deserves in

chapter XI. An excellent outline is given for the procedure in wound treatment which should be read by every student and practitioner. Practical hints are given for the preparation of the material and patient for aseptic operations. If these suggestions were carried out by practitioners success would be assured in most cases.

Part II of the book takes up the general pathological conditions in so far as they relate to surgery. Wounds of various kinds, abscesses, ulcers, etc., are discussed at considerable length and well classified.

Specific infectious diseases are prominently mentioned and their importance considered from the surgeon's viewpoint.

The last chapter gives a thorough description and classification of the various varieties of tumors found in the different animals.

The book as a whole is neat in appearance, well bound, but it is to be regretted that it was thought necessary to use small type in order to reduce its size.

The author is to be congratulated on presenting to the student and practitioner such a commendable treatise on the principles of veterinary surgery.

O. V. B.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY

W. A. NEWMAN DORLAND, A.M., M.D., F.A.C.S.
Eighth Edition. W. B. Saunders Co., Philadelphia and London.
Plain $4.50 net. Index $5.00 net.

An up to date dictionary is as indispensable to a veterinarian as to a physician. New tests and methods of diagnosis are being constantly devised, and to keep abreast with the technique of modern practice, one must familiarize himself with them. The present edition shows that the list of tests has grown from ten pages in the original edition to nineteen. Several hundred new terms have been defined and the text matter has been increased by thirty pages.

To students and practitioners alike a dictionary is a fundamental necessity in order to determine the meaning and pronunciation of more or less uncommon words which they must encounter. A good dictionary is one of the fundamentals of an education.

P. A. F.

NECROLOGY

WILLIAM F. MYERS

Dr. Myers shot himself accidentally while hunting on Thanksgiving day and died the following night.

Doctor Myers was 51 years of age. He graduated from the Chicago Veterinary College in 1889 and located in Fort Wayne where he enjoyed an excellent practice. He was an active member of the A. V. M. A. and all who attended the Indianapolis meeting will recall his indefatigible efforts to make it successful. Doctor Myers was a bachelor and lived with his mother, to whom he was devoted until her death a few years ago.

The writer roomed with "Billy" Myers in college and a more congenial companion could not be found. Free from criticism and hypocrisy he had a laugh and a joke to smooth over every rough place; charitable, generous and genial. Billy was a prince of good fellows. The fact that over thirty veterinarians gathered at his funeral, but feebly expresses the esteem in which he was held by those who knew him best as a clean, lovable fellow with a high sense of honor.

He was a great lover of nature and children. To the hundreds who have enjoyed his whole-souled hospitality at his cottage on the lake, his sad death was a terrible shock, but everyone who knew him acquired a sunnier and more charitable view of life.

I can see him now in our college days as he sat at the piano playing and singing a rollicking song and the chorus comes floating down through the years: "I'm a man you don't meet every day." Surely one did not meet such a good fellow and true friend every day.

N. S. Mayo.

PROFESSOR JAMES McCALL

Professor James McCall, principal and founder of the Glasgow Veterinary College in Scotland, died on November 1 at the age of eighty-one years. Dr. Joseph Hughes of Chicago and Dr. W. H. Dalrymple of Baton Rogue, La., are former students of Professor McCall.

EMMET K. BUTTS

U. S. Veterinary Inspector Emmet K. Butts, formerly of Dryden, N. Y. was killed in an automobile accident at Atlanta, Ga., December 19.

MISCELLANEOUS

A special course for licensed veterinarians will be given in the School of Veterinary Medicine at the University of Pennsylvania during the week beginning January 24th. The course will include lectures and demonstrations in medicine, surgery, pathology, milk hygiene, stock judging, etc.

The semi-annual meeting of the Missouri Valley Veterinary Association will occur in Kansas City, February 1st, 2d and 3d, 1916.

The marriage of Miss Pearl Elvesta Gossett and Dr. M. M. Leonard of Asheville, N. C. occurred November 10th. Dr. Leonard and Dr. S. H. Stephens have recently formed a partnership for the practice of veterinary medicine.

Dr. Alfred Savage of Macdonald College, Quebec, after spending the summer and fall in camp, is expecting to go overseas with the Army Veterinary Corps.

Miss Johnnie Mary Stewart and Dr. William Thomas Hufnall were united in marriage last September. Doctor Hufnall is food inspector at Port Arthur, Tex.

The average American farm family consumes over $100 worth of meat per year.

It is reported that one new herd of cattle in Illinois came down with foot-and-mouth disease December 14.

A meeting of the Western New York Veterinary Medical Association was held at the Hotel Statler, Buffalo, December 16.

An interesting "Brief History of the Cattle Tick Fight in Louisiana to Date" is given in Circular No. 6 of the Louisiana State Live Stock Sanitary Board. The author is Dr. W. H. Dalrymple of Baton Rogue, La.

According to *The Farmer,* St. Paul, Minn., the health of the live stock of Minnesota shows a high state of efficiency. In the period beginning August 1, 1914 and ending July 31, 1915 there were tested for tuberculosis 51,866 head of cattle with 1,495 reactions or 2.84%. The pure bred herds of the state are practically clean, less than 1% showing reactions during the year. Glanders has almost

disappeared. In 1905, 606 horses were killed on account of glanders. The number of cases has declined steadily year by year to 38 in 1914–15.

It is stated that the most noteworthy achievement of the Minnesota Live Stock Sanitary Board was the effectual stamping out of foot-and-mouth disease, brought into the state by infected serum. This piece of work alone more than repays the state for the entire cost of the Sanitary Board since its inauguration twelve years ago.

Delivering Wrong Substance to Buyer. A firm in Utah which delivered boiled linseed oil to a customer on an order for raw linseed oil to be given to horses, is declared by the Supreme Court of that State to be liable for the value of four horses which died as a result of use of the oil delivered, and for injury to a fifth. (Wright vs. Howe, 150 Pacific Reporter, 956). The reason for responsibility is stated by the court as follows:

"The plaintiff requested, and supposed he was buying, one article possessing no harmful properties to animals, while the defendant sold him, not an inferior grade or quality of article called for, but a different article possessing properties deleterious to animal life."

The court holds that the case falls fairly withing the rule of law applied by the Texas Supreme Court in which a seller was held liable for loss of a cotton crop attributed to delivery to the owner of chrome green when he called for Paris green for use in killing cotton worms. The damages recoverable in that case were adjudged to be the value of the crop as it stood just before it was destroyed by worms, plus the cost of the compound delivered and the cost of applying it to the cotton, with interest on the whole expenditure.

—*Druggists Circular.*

The annual conference for veterinarians will be held January 11 and 12, 1916 at the N. Y. State Veterinary College at Ithaca, N.Y.